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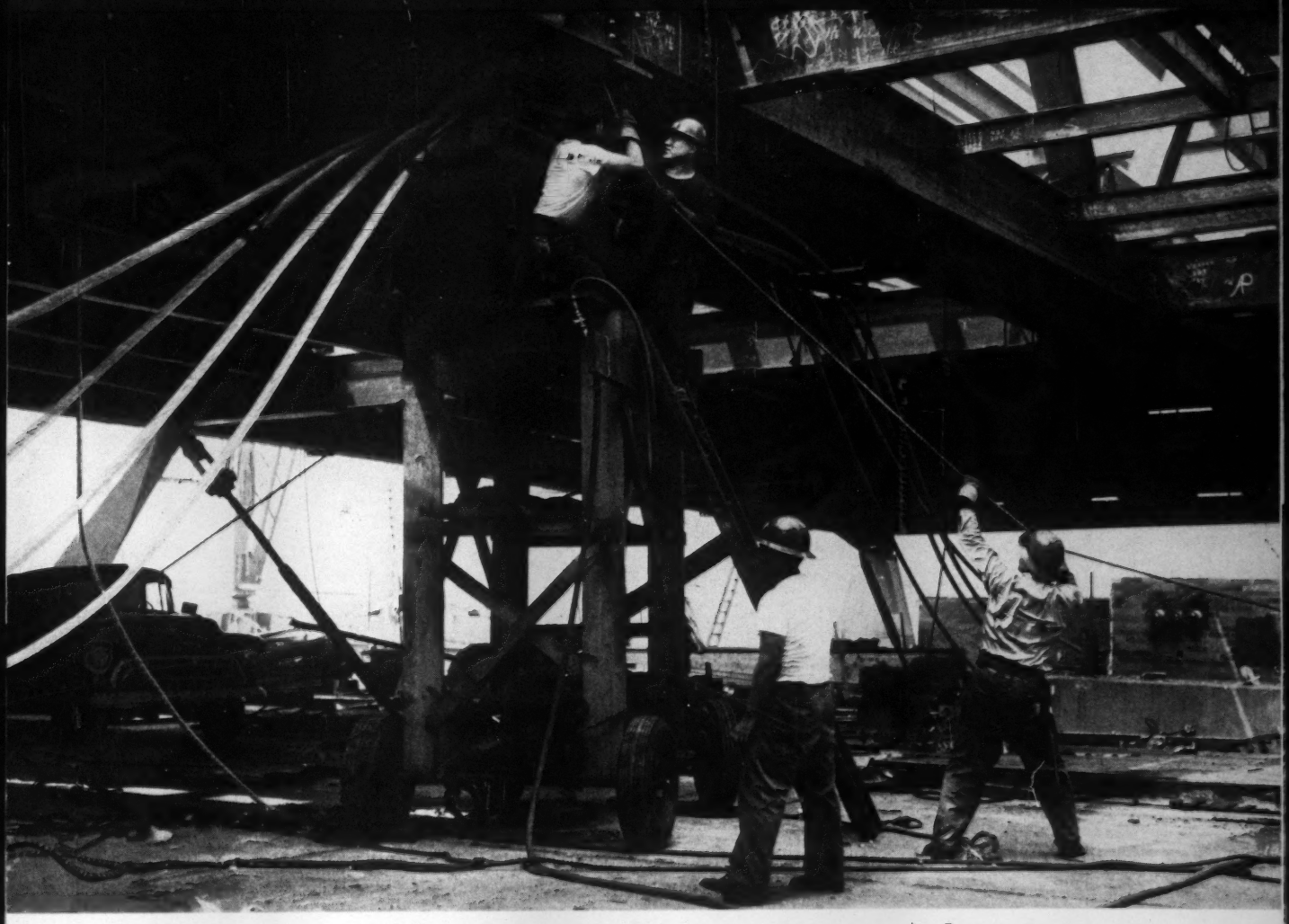

Prestressed trusses give space to buses p.32

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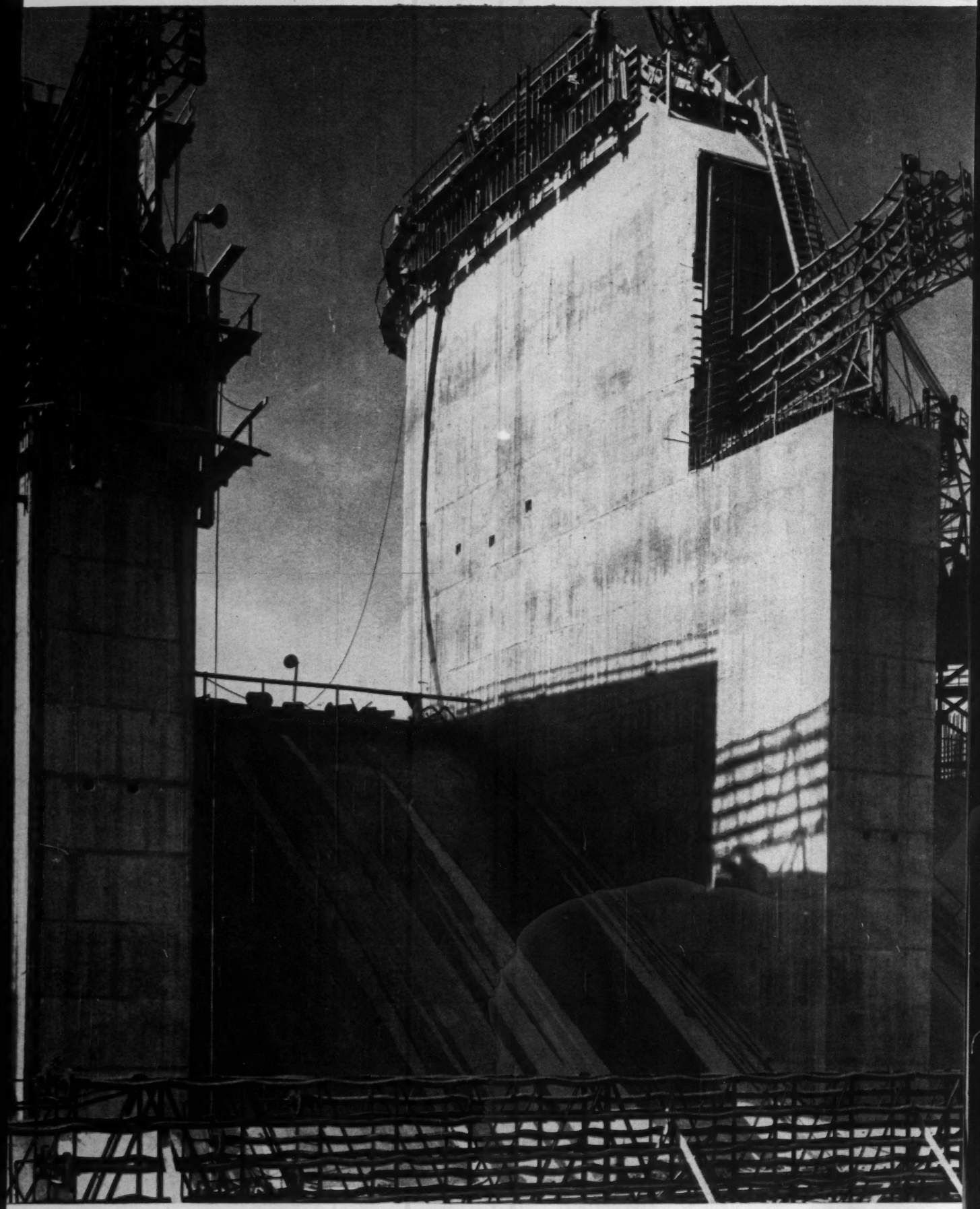


Close-up of spillway section. Note jigs containing post-tensioning assemblies. Two of the 12-ton units have already been placed on "A" frames to ±⅛-in. accuracy. A third (foreground) is ready for placement.

Tons of tensioning...

PIN-POINT PLACEMENT

⅛ OF AN INCH almost gets lost in the box-car figures that spell out the specifications for a dam the size of the new $93-million Wanapum Hydroelectric Development.

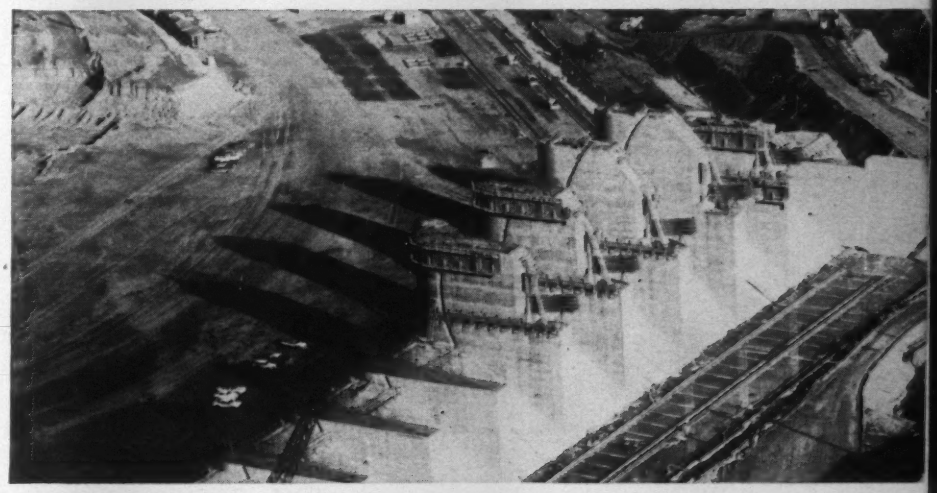
But ±⅛-in. placement accuracy was the spec Ryerson faced in supplying post-tensioning for the spillway piers. Each of the 11 center piers supports a tainter gate 50 ft. wide and 65 ft. high. Each gate will be subjected to water pressure of 3750 tons. To counteract this thrust on the gate, Ryerson post-tensioning assemblies are set into the piers as shown in photo at left.

The big problem for Ryerson: How to supply 14 tendons, weighing 12 tons, that could be placed to the minute accuracy of ±⅛-in.

HOW RYERSON DID IT. But specialized knowledge that comes from close association with thousands of reinforced concrete construction projects solved the problem.

Fourteen 90-wire post-tensioning units—with a total working force of 4400 tons—were assembled in a jig 5 ft. wide, 10 ft. high and 75 ft. long.

Eleven such assemblies were built—one for each center pier. They were then trucked from the Ryerson plant in Seattle, directly to the job site. With a single crane, each 12-ton unit could be accurately positioned on three supports—meeting the ±⅛-in. spec.



Aerial view of Wanapum Hydroelectric Development on the Columbia River near Vantage, Wash. Each of the center piers contains fourteen 90-wire post-tensioning units—with a working force of 4400 tons. Prestressed concrete sections will support huge tainter gates. Owner: Grant County (Wash.) Public Utility District. Contractor: Grant County Constructors. Engineers: Harza Engineering Company, Chicago.

831,250 KW GENERATING PLANT. Still another test of Ryerson reliability came on the 1540 ft. powerhouse section. It will contain 10 generating units, with space provided for six future units. To make this provision, the design calls for a light intake section fastened securely to the underlying rock with prestressed anchors.

In each of seventy-eight 16-in. dia. holes 74 ft. deep, Ryerson placed four 90-wire post-tensioning assemblies—each with a working force of 1270 tons.

Each hole was then filled with 30 ft. of cement grout and allowed to harden for two to three weeks. In a pull-out test, 1950 tons of pulling force could not break the wires, nor pull them out of the grout plug.

The creative assistance given on projects of this kind is one reason why Ryerson is first choice for post-tensioning on the nation's biggest, most important construction projects.

For details on our complete post-tensioning service, and our many products for the construction industry, call your nearby Ryerson plant.

12-ton Ryerson-designed post-tensioning assembly leaves Ryerson Seattle plant for the job site. Jig holding 14 tendons is 5 ft. wide, 10 ft. high and 75 ft. long.

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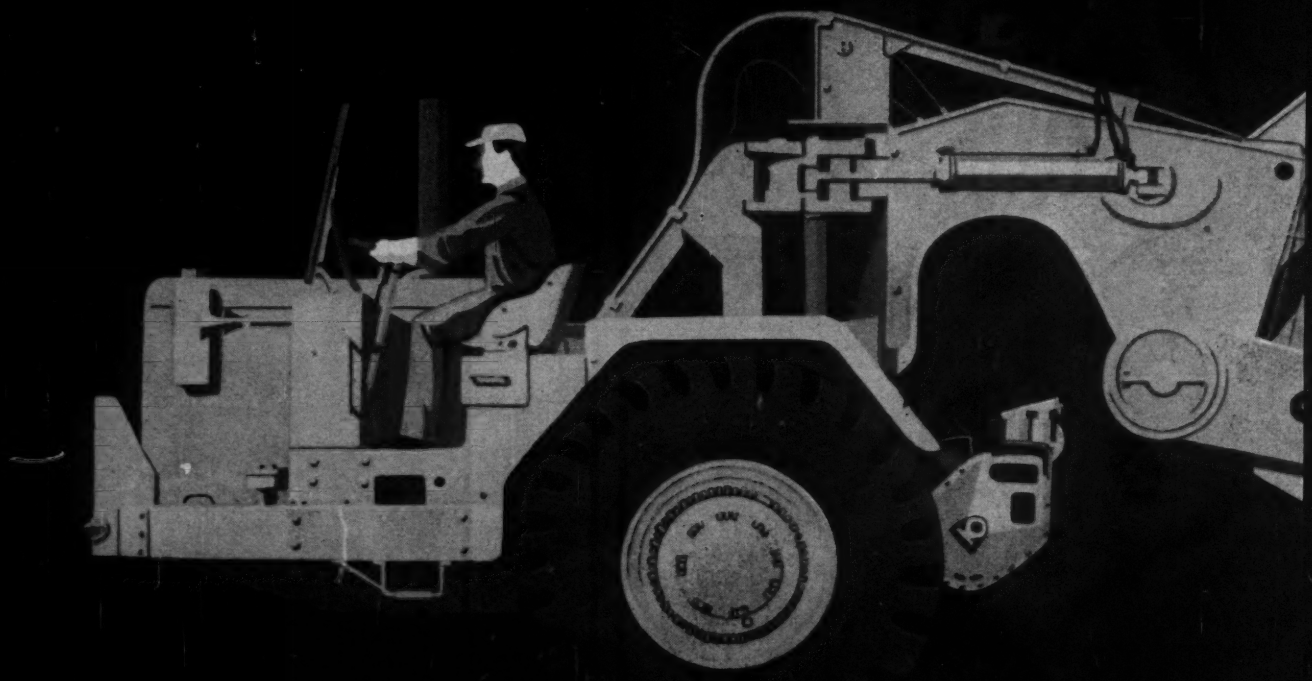

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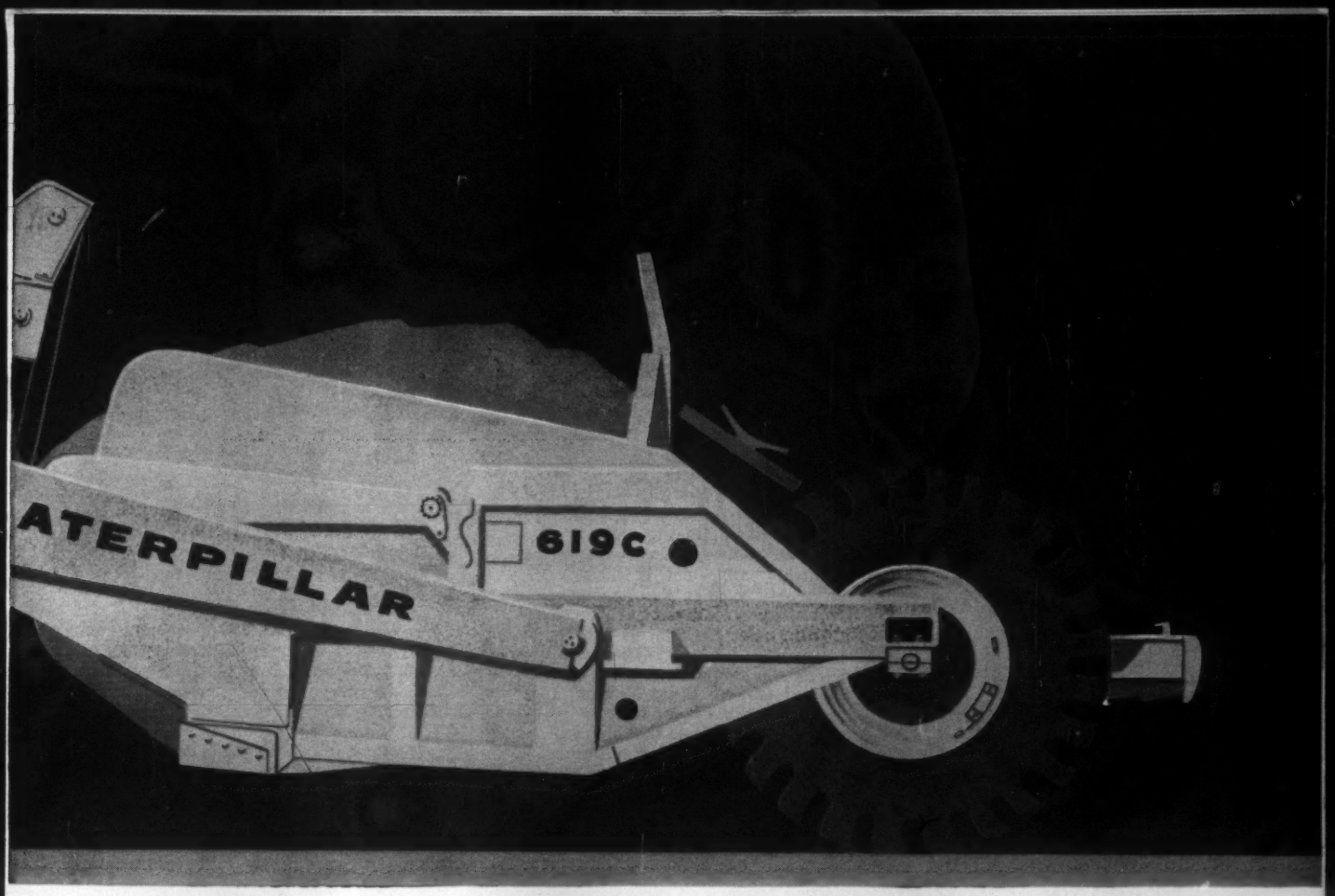

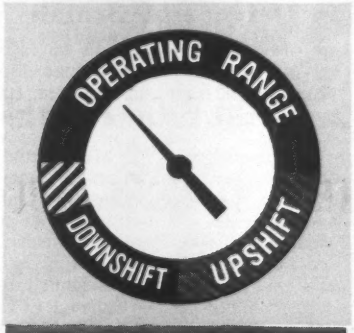

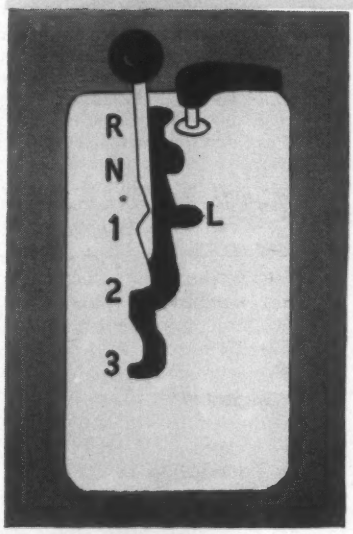

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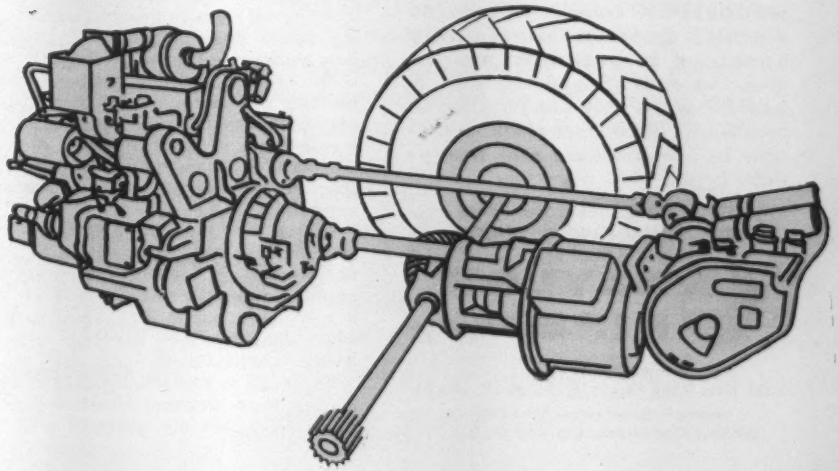
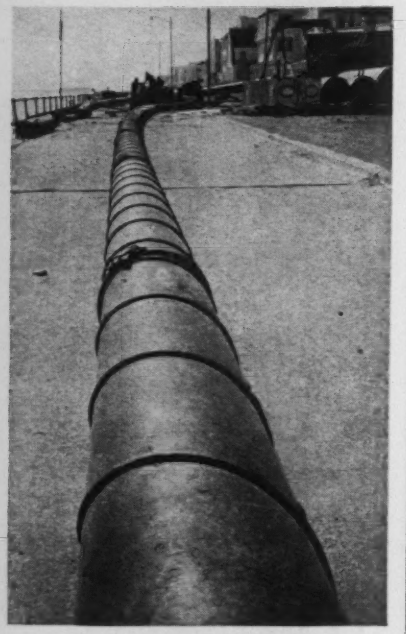


SHORT CUT TO LONG LINES



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Reader Comment

Sociology of Site Selection

SIR—Mr. Giffel's struck a welcome note of optimism in your article, "A Better Year for Industrial A-Es," (ENR May 4, p. 57). We at Albert C. Martin and Associates of Los Angeles are in fundamental agreement with him.

Our one reservation concerns his statement: "We believe the client is competent enough in his own business to know where to build his plant. We look at the physical plant site, not at the social or sociological consequences of putting a plant on it."

We too believe that our clients are highly competent in their own businesses, whether this be manufacturing airplanes, aspirins or abacuses. But this does not mean that they are necessarily qualified to select a plant site properly. This is a highly technical and specialized job; we could as well expect the client to design the structure.

We have found that although a client usually knows what he wants, sometimes he doesn't know what he really needs. We help him discover this only after long exploratory and analytical sessions.

The A-E should counsel his client on such matters as economic and population trends, and the community's long-range program for civic improvements (e.g., flood control, sewage disposal, highway construction and land use planning).

As for Mr. Giffel's second contention —that the possible social consequences of plant site selection are not considered—I can only say that in one example I am thinking of, if we had not properly analyzed all possible factors in one site's selection, it would have required three hours for employees to enter or leave the proposed new facility. Obviously this would have represented an unconscionable waste of man-hours, and would no doubt have seriously lowered the efficiency of those who finally fought their way to work.

This situation was revealed when we made a preliminary traffic study of the surrounding areas and found that existing access roads and freeway ramps were inadequate for the projected load. In my opinion, we would not have been fulfilling our professional obligation to our client if we had not conducted such a study, thus revealing to him a major drawback requiring remedial highway construction by County and State authorities.

We at Albert C. Martin and Associates believe that "being a good neighbor" is not just a moral responsibility of industry but is an essential part of a company's public relations activity, which actually shows important pluses on the balance sheets.

Inasmuch as many new communities do not have planning authorities and most clients are not equipped with a community planning staff, we believe that the responsibility falls upon the architect-engineer to educate himself in these matters in order to be able to design a better plant.

JOHN DAY
Associate Structural Engineer
Albert C. Martin and Associates
Los Angeles, Calif.

D. C. Likes Clay Pipe

SIR—We read with a great deal of interest the article, "Washington Builds to Clean Up the Potomac" (ENR May 18, p. 44).

This article on Washington's multi-million-dollar project to rebuild its sewer system, otherwise very well done, makes no mention of materials used.

We believe it is of interest that vitrified clay pipe is being used for all sanitary sewer lines ranging in diameter from 10 in. to 36 in. in this project.

The manufacturers of clay pipe take particular pride in the fact that for many years in the nation's capital, the specifications for sanitary sewers have called for vitrified clay pipe.

G. A. ROBINSON
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In Defense of Prefab

SIR—Mr. Weast's comments on enforcing building codes (ENR June 15, p. 12) contain some unwarranted statements regarding pre-engineered metal buildings.

The members of the Metal Building Manufacturers Association are eager to assist in the development of building codes that will assure the user that he is obtaining a building which meets his requirements. Members of this association have prepared and distributed thousands of copies of the RECOMMENDED DESIGN PRACTICES MANUAL, which, we believe, indicates that they are anxious to have buildings designed according to accepted engineering principles. The personnel of member companies are staffed with competent engineers constantly endeavoring to increase the quality of their products.

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ENGINEERS: RAYMOND offers soil information for site of 1964 World's Fair

As plans take definite shape for the 1964-65 World's Fair at Flushing Meadows, Long Island, the engineering question arises—what's the ground like for foundations?

Raymond knows. Borings, soil tests, and pile tests for the 1939 World's Fair, on the same site, were made by Raymond under Contract #1. We have data on this area in our files, available on request to architects and engineers concerned with new construction for the forthcoming Fair. What you need we may be able to offer on a moment's notice. Just incidentally, the only permanent buildings of the 1939 Fair stand firmly today on Raymond foundations. 1,817 piles were driven for the Amphitheater & Island Stadium and 719 for the New York Exhibition building.

From the ground down—here and overseas

The World's Fair is only one example. In a great many areas of the States—and elsewhere throughout the Free World—chances are that Raymond has already made soil investigations. The experience of 64 years is readily at hand. So, with us, you will be that much ahead, which is a large step indeed.

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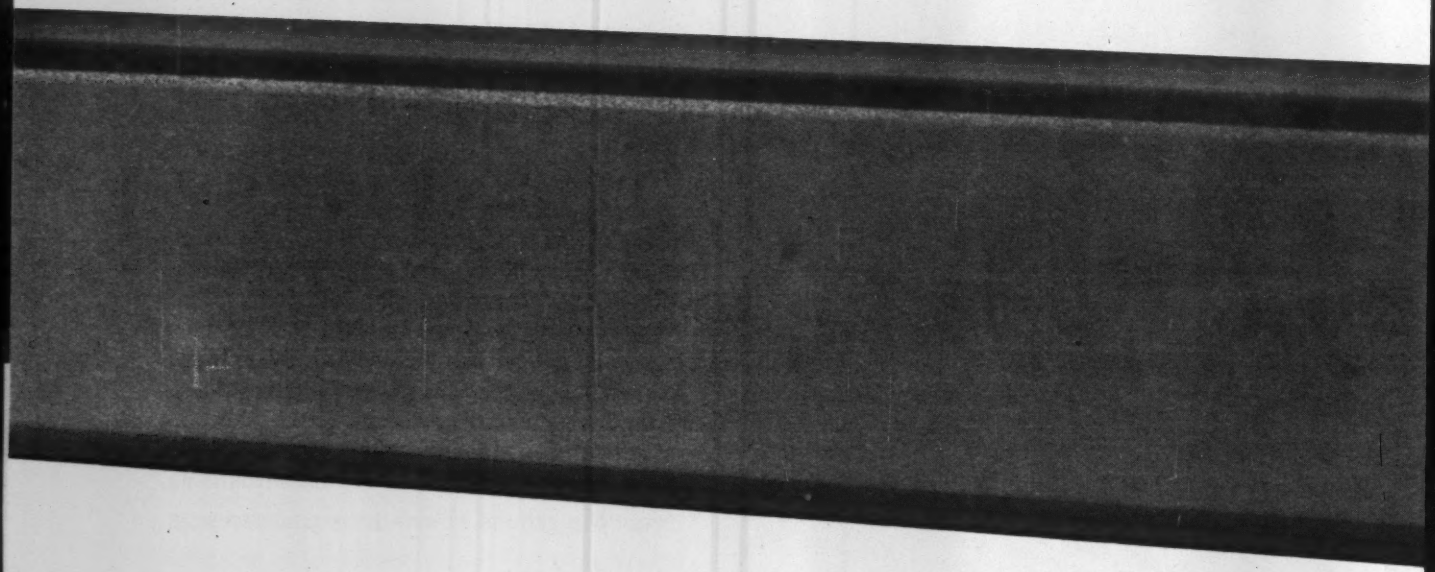

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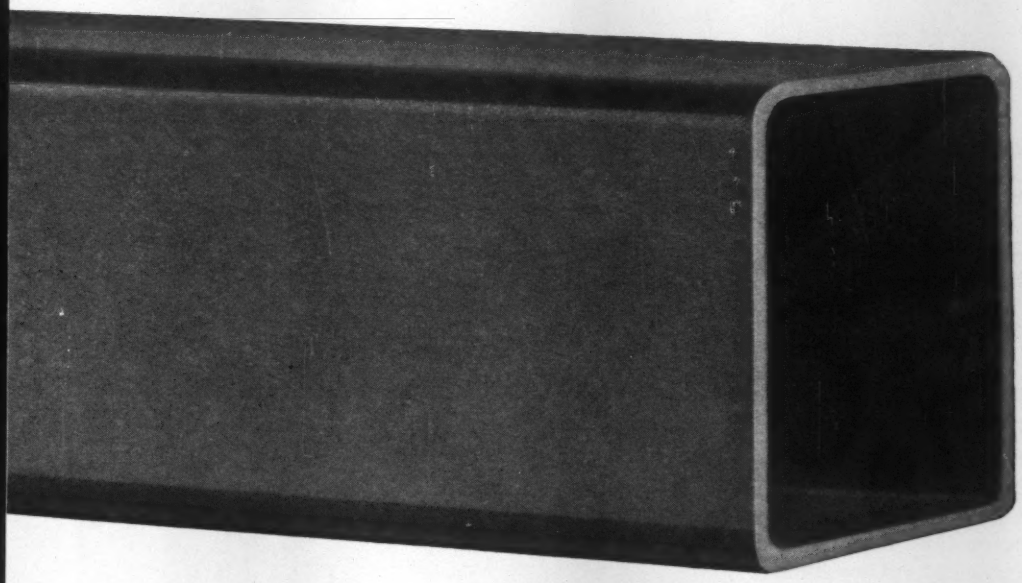

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USS National Hollow Structural Tubing comes in a wide range of stock sizes: 1″ x 1″ to 10″ x 10″ for squares, up to 32″ perimeter for rectangles, and in lengths 36 to 42 feet. For more detailed information, send the coupon.

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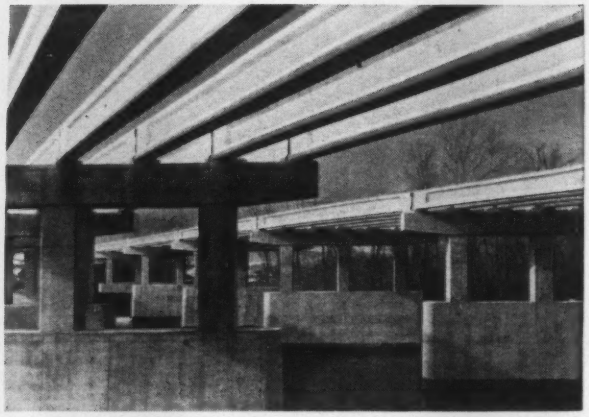
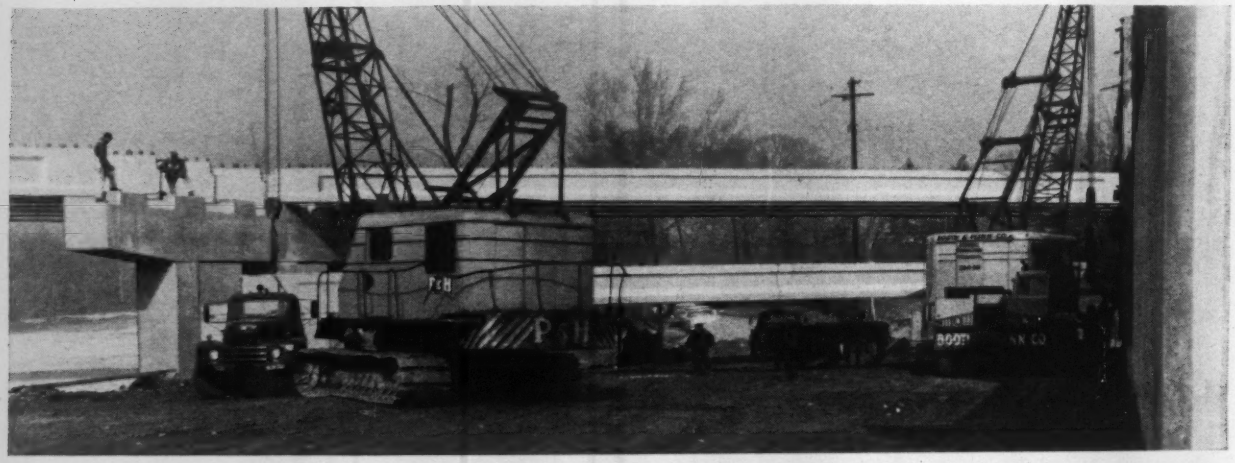
PRESTRESSED BEAMS *for Interstate Highway Twin Bridge*



Beams in place present graceful pattern of prestressed concrete. They range in length from 50′ 3″ to 90′.



Two cranes lift from truck and place this huge 41½ ton beam in a matter of minutes.

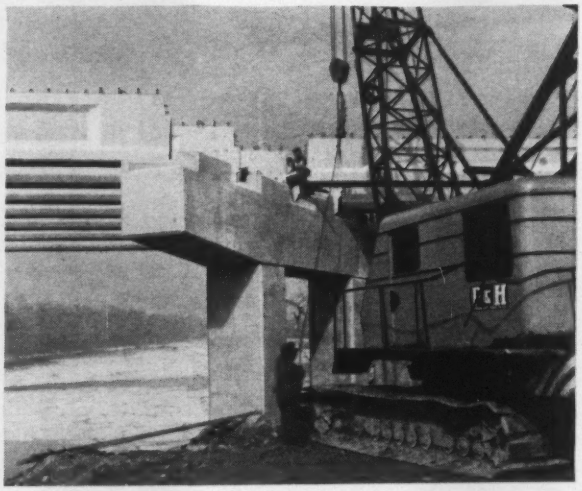
• At Neshaminy Creek, near Croydon, Pa., another link in the new Delaware Expressway between Trenton and Philadelphia is completed quickly through the use of prestressed concrete. There are 112 beams of varying sizes, the largest being 90′ long and weighing 41½ tons, in this 8-span twin bridge.

Like so many other bridges in this country's growing Interstate Highway System, this one is of prestressed concrete for experience-proved reasons: low initial costs, low maintenance costs, ease and speed of erection, trim appearance.

Eastern Prestressed Concrete Corporation used Lehigh Early Strength Cement in manufacturing the prestressed beams. Use of this cement permitted maximum production efficiency, resulted in quick completion of units to meet closely linked casting, trucking and erection schedules.

This is another example of the advantages of Lehigh Early Strength Cement in modern concrete construction. Lehigh Portland Cement Company, Allentown, Pa.

LEHIGH CEMENTS



Beams spanning stream are 45″ deep, while the 90′ beams spanning roadway are *only* 39″ deep.

Owner: Pennsylvania Department of Highways
General Contractor: Booth & Flinn Company, Pittsburgh, Pa.
Prestressed Beams: Eastern Prestressed Concrete Corporation, Line Lexington, Pa.

YUBA

TILTS DOWN

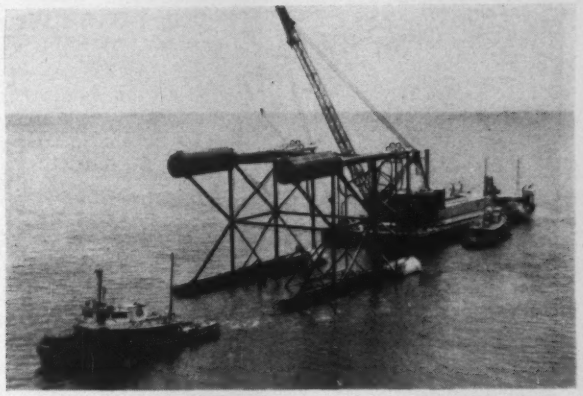
TO ERECT AT SEA

Imagination, experience and technical proficiency—these are the necessary skills that Yuba crews bring to every installation and erection job.

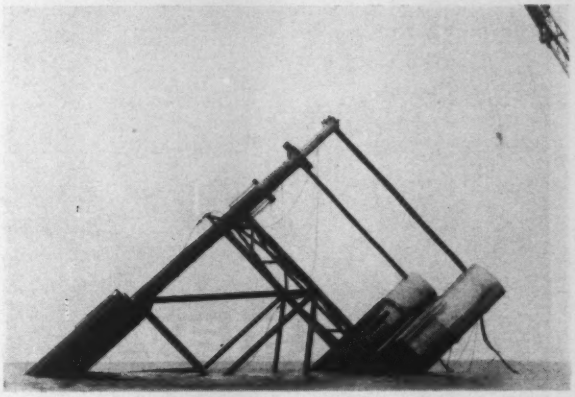
Take this "Tilt Down" project for example. This unique 148 foot drilling platform base was designed by Standard Oil Company of California engineers, as a joint venture with Humble Oil and Refining Company. Yuba erected the tower at its offshore location near Santa Barbara, California, in 106 feet of water. The photos at the right tell the story of how Yuba put "Hilda" on her feet two miles off the coast—well ahead of schedule. This is not the complete story, of course, but it illustrates the type of unusual jobs expertly handled by Yuba Erectors from start to finish.

If you would like to know more about the *big*, the *tough*, the *exacting* jobs, and how Yuba crews handle them, write for the bulletin shown below.

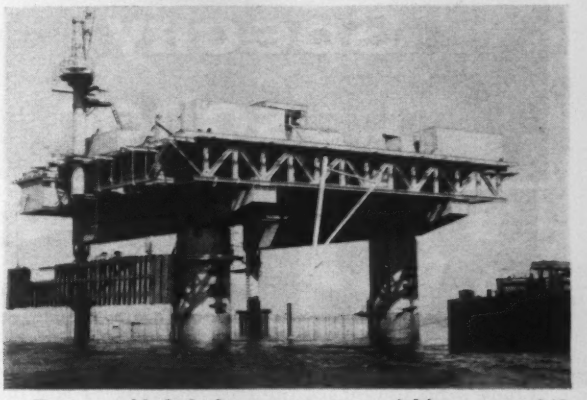
Yuba Equipment Installation, Field Erection, Steel Construction and Bridge Building services are described in new Bulletin YSC260—available on request.



1 Tower base is towed to the site on its side, supported by two full-length pontoon legs. Derrick barge is used for erection of super-structure units.



2 Ballasted legs swing down to bring top of tower base out of water. Hoses carry compressed air to control the rate of flooding in legs.



3 Pre-assembled deck components, weighing up to 248 tons are placed by giant derrick barge. Yuba Erectors performed the entire offshore installation job.

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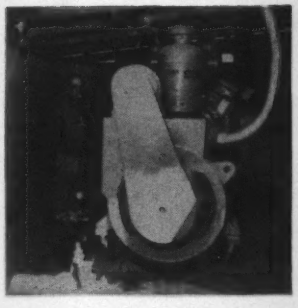
engine power
BY CATERPILLAR

75% cut in fuel costs leads to purchase of second Cat Natural Gas Engine for increased quarry efficiency

The McClinton Bros. Limestone Quarry is located at Johnson, Arkansas, five miles north of Fayetteville. Products are dry white limestone, cement, asphalt and concrete mix, cement blocks, and aggregates. Caterpillar Engines have played a large part in increasing quarry efficiency.



Owner Clark C. McClinton beside the Cat G375 which furnishes power to drive the quarry's motors. His experience with this engine led him to the purchase of a second, the G342, for the impact breaker.

The new Cat G342 supplies power for an impact breaker. It replaced an electric motor and has proved to be more economical and more efficient for this operation.

Clark C. McClinton bought his first Caterpillar Diesel over 14 years ago. When he was ready with a modernization plan for his quarry at Fayetteville, Arkansas, he purchased a Cat G375 Natural Gas Electric Set for prime power. The result: 75% savings in fuel costs and maintenance outlays. In another step of his plan: an engine to power an impact breaker, Mr. McClinton did not have to make a choice. It had already been made for him by his experience with Caterpillar Engines, particularly the G375. "The fuel economy and low initial cost per horsepower convinced us that another Cat Natural Gas Engine would be a worthwhile addition to our quarry." In addition to replacing an electric motor for powering the impact breaker, the Cat G342 also eliminated the need for a transmission to vary the speed required for stone fineness.

The reason you get such dependability from Cat Natural Gas Engines is that they are built essentially as diesels—only the pistons and fuel systems have been changed for natural gas operation. This built-in diesel strength allows high compression ratios for high horsepower output and superior fuel economy. For the full story, see your Caterpillar Dealer. He can show you dramatic proof of the superiority of Caterpillar Natural Gas Engines. He's listed in the Yellow Pages. Or write Engine Division, Caterpillar Tractor Co., Peoria, Illinois.

CATERPILLAR

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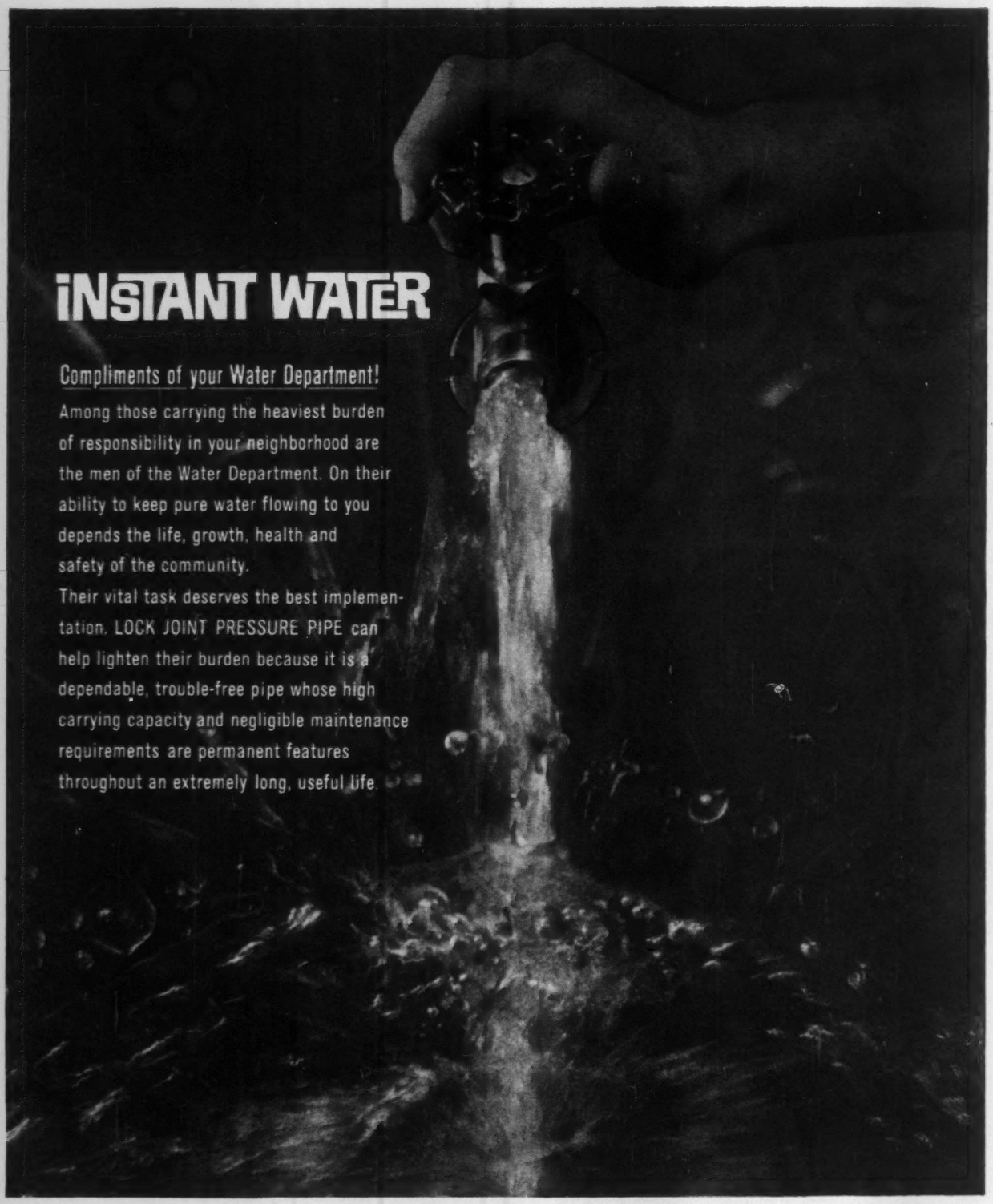
Engine Division, Caterpillar Tractor Co., Peoria, Ill.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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

EVERYBODY AT FAULT—A coroner's inquest into a Toronto subway construction accident that took two lives (ENR June 6, p. 22) placed responsibility on almost everybody involved with the job. The jury ruled that Frankel Steel Construction Co. erected improperly designed forms; that McNamara-Raymond, general contractor, was responsible for its subcontractor, and that the Toronto Transit Commission became responsible when it approved the design. A report on the cause of collapse is still to come.

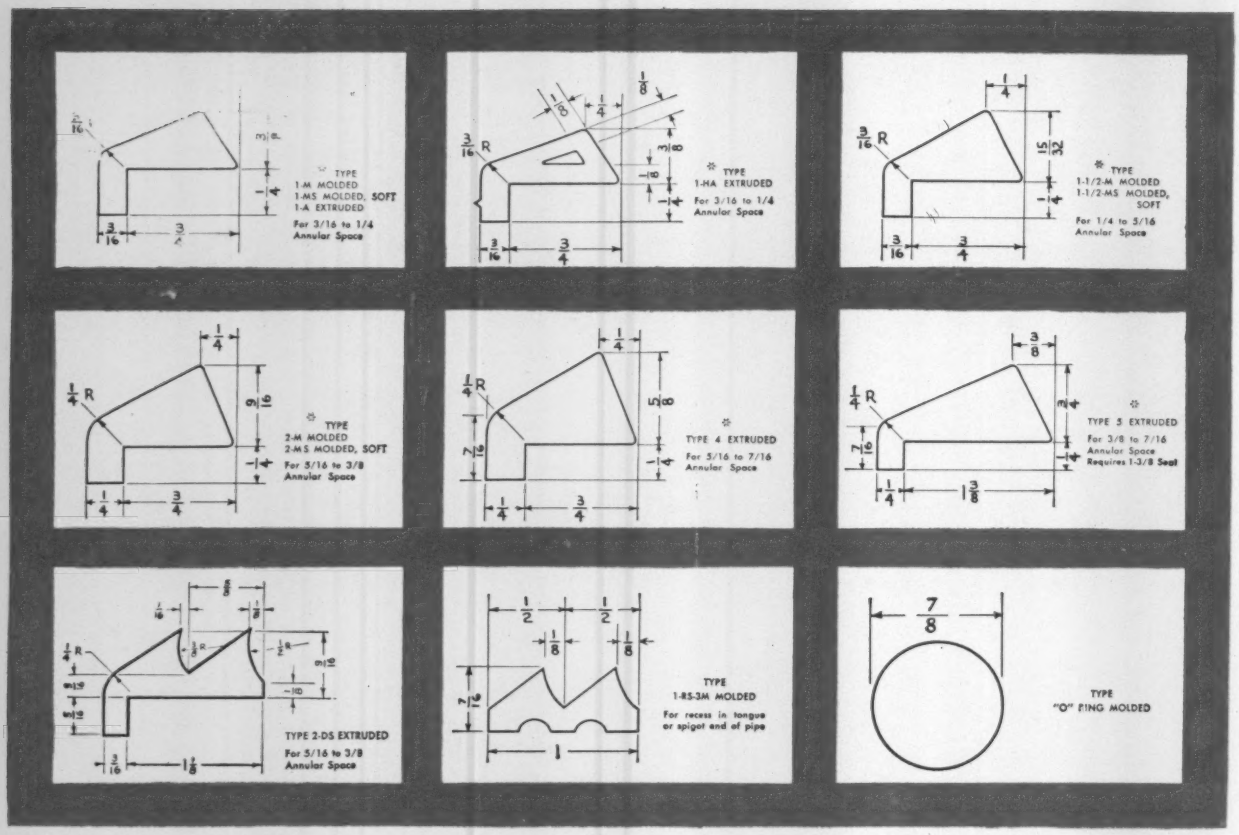
NEW IDEA ON COLORADO POWER—Los Angeles clouded the already muddy Colorado River power picture last week by proposing that while studying existing applications for a dam at Bridge Canyon (by L. A.) and dams at both Bridge and Marble canyons (by Arizona) the Federal Power Commission also study the possibility of a dam at Marble Canyon and a 43-mile tunnel to a powerhouse at Bridge Canyon (by anybody).

FRINGES GET AN RX—Prescription drugs, including insulin, are now available to 7,000 New York City bricklayers and their dependents at the nominal cost of 50 cents per prescription. The program, in which 1,500 pharmacies participate, is sponsored by the Bricklayers Insurance and Welfare Fund, which is billed for the balance of the cost of the drugs.

TOP DEFENSE CONTRACTORS—A handful of constructors made a list of the top 100 contractors the Defense Department signed up in 1960. The list starts out: General Dynamics, Lockheed, North American and GE; it gets to Kaiser-Raymond-Macco-Puget Sound as 45th with $75.4 million worth of contracts. Also named: Peter Kiewit; Merritt-Chapman & Scott; Jones-Teter-Winkelman; Utah-Manhattan-Sundt; Morrison Knudsen; and Western Contracting, which makes the list as 99th with $24.2 million.

TUBE STANDARD URGED—Republic Steel Corp., after adding over 400 new sizes to its line of round, square and rectangular tubing, calls for an official body to develop a specification for structural tubular shapes. Lack of a design standard is the reason the U. S. lags behind Europe in tubular-shape applications, company officials say. Meanwhile, U. S. Steel Corp. has started commercial rolling of tubular shapes (see p. 47).

CUTTING OFF THE ELECTRICITY—The Northern Illinois Gas Co. will equip its West Central Division headquarters with two natural-gas-fired turbines. The turbines will drive electric generators to supply the building's electrical needs. And gas exhausted from the turbines will produce steam to heat and cool the show-place office at Glen Ellyn, Ill.



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WASHINGTON OBSERVER

- **House balks at long-term airport aid**
- **Congress balks at long-term foreign aid**
- **Volta project tests investment incentives**
- **Commerce finds '61 headed for record**

● **Senate and House aviation subcommittees have split over a key feature of President Kennedy's aid-to-airports program.** Both approved a five-year extension at a $375-million spending level. But the House group has balked —as expected—at giving the Federal Aviation Agency long-term contract authority. The House subcommittee insists on maintaining tight control over annual expenditures.

—

● **President Kennedy's foreign aid bill is in serious trouble in Congress —particularly in the House.** Chief target of critics is the President's request for authority to draw up to $8.8 billion from the Treasury over the next five years to finance long-term economic development overseas. Heavy construction projects would fall in this category.

Congressmen intent on preserving House powers label this "backdoor financing"—an effort to by-pass appropriations committees. Also, the Administration is worried about lack of business support for the aid bill. Mr. Kennedy is searching for business leaders who will help him whip up sentiment in favor of the measure.

—

● **New U. S. government incentives for private investors in underdeveloped countries will be tested by the Administration.** Testing ground is the long-delayed Volta River project in Ghana—a $168-million dam and power facility. Contributors will be the U. S. government, the World Bank, the British government and Ghana. Tied to the deal is a consortium of three private U. S. companies—Kaiser, Reynolds and Olin Mathieson—which will build an aluminum smelter to use the bulk of the power produced.

The new incentives will include a tax treaty with Ghana, broader investor guarantees and direct government loans to the companies. President Kennedy hopes that the Volta River project may become a model for other similar developments. He has requested authority to offer such incentives to private firms in his foreign aid bill.

Final agreement on the Volta River financial package is expected in the next three to six weeks. The project involves construction of the Akosombo Dam and hydroelectric and transmission facilities about 60 miles upstream from the Volta delta. Mr. Kennedy made a firm commitment in hopes of keeping Ghana neutral in the cold war.

—

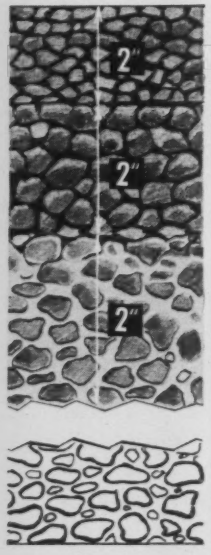
● **New construction expenditures are expected to hit a record of $57.8 billion in 1961.** This is the latest report from the Commerce Department. The total would exceed last year's outlays by 4%. Public construction is carrying the load, showing an anticipated increase of 10% over 1960. Private construction will be up a modest 2%, although private housing outlays are expected to be down slightly. The Commerce Department estimates the value of construction put in place on the basis of contracts awarded in the past. For new business—ENR's contract awards—see p. 21.

FOUND!

A winning combination: Asphaltic concrete made with Chevron Asphalt over a Dilute Bitumuls Treated Base.

For "Deep-Strength" Construction PLUS Economy!

Realignment of U. S. Route #99 (Pacific Highway) between Albany and Eugene, Oregon, involves construction of twelve miles of new, heavy-duty pavement.



4 inches Asphaltic Concrete made with Chevron Asphalt; laid in 2 lifts as indicated.

Top 2 inches of crushed stone base treated with diluted Bitumuls; then compacted.

Compacted base stone

The original "specs" called for construction of a compacted stone base, surfaced with 4 inches of asphaltic concrete. As a result of preliminary tests, however, a Field Change Order was issued specifying treatment of the top 2 inches of the base with an economical nine-to-one dilution of Bitumuls.

Dilute Bitumuls Treatment "controlled" the top of the base during surfacing; provided water-resistance that contributed to an overall stronger pavement. Over the base, two lifts of asphaltic concrete made with Chevron Asphalt were placed to complete the construction.

The job is under the direction of the Oregon State Highway Department. The contractor, Warren Northwest, Inc., has done a fine job of coordinating all phases of the job. One key factor in maintaining operations on schedule has been the dependable, on-time service on Bitumuls and Chevron Asphalt deliveries.

Call office nearest for details on how Bitumuls Emulsified Asphalts and Chevron Paving Asphalts can be combined to give you better pavements at lower cost.

Dilute Bitumuls-Treated Base

Surfacing (made with Chevron Asphalt)

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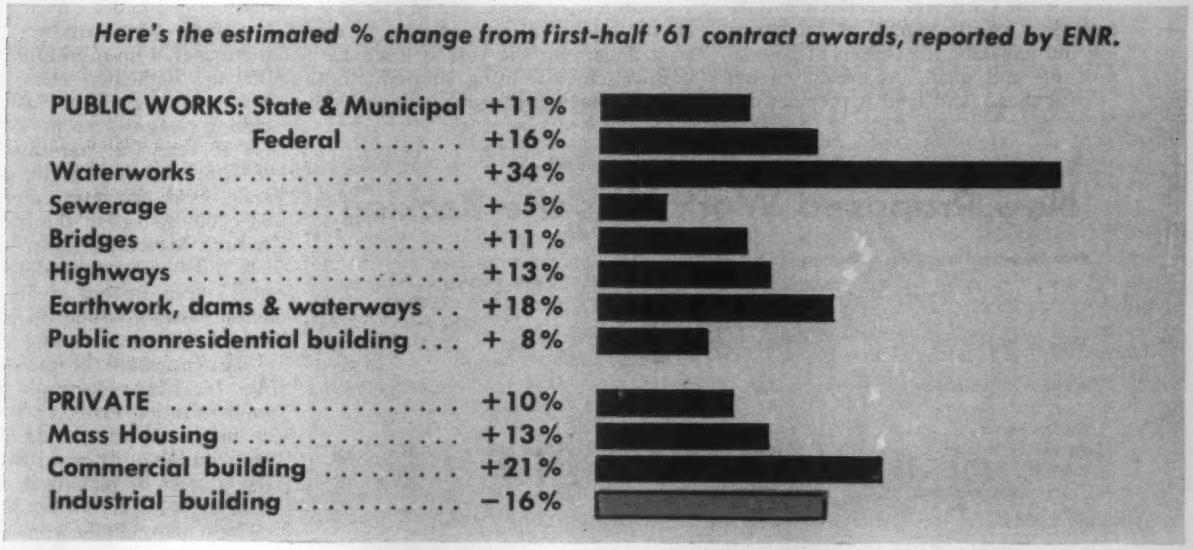
In the Second Half—

Here's the estimated % change from first-half '61 contract awards, reported by ENR.



Nearly Everything Will Be Up

The next six months should see heavy construction contractors take on 11% more new business than they had in the first half of 1961. Three overriding reasons for expecting such a substantial improvement are:

- Federal construction contracting budgets are up for the fiscal year that began July 1.
- Federal aid is also increasing sharply in the new fiscal year for highways, bridges, sewage treatment plants and probably will for airports.
- The post-recession recovery is bolstering confidence. This should spur commercial building to an even faster pace and, with an assist from the liberal housing bill, should put mass housing on the upgrade again.

There are enough highlights to brighten spirits in many quarters of the construction industry. But the outlook is not without a few shadows. A major weak spot is industrial building. The spurt in new plants proposed during the first quarter faded in the second quarter and with it sank hopes of a sustained rise in the industrial building contract pace during July-December, such as occurred in the last six months of 1960. But even so, industrial building has already racked up enough contract volume to keep the 12-months total slightly above last year in the face of a decline during the rest of the year.

Also a bit disturbing is the softness in new plans initiated by state and local public works agencies. This, like the recent 1960-61 recession that it mirrors, has amounted to a rather mild downturn, so the slide in general business may not have hurt tax collections too much. Figures aren't reported yet to bear this out. But New York City, for example, reports that its business tax take (retail sales levies and business-financial tax) in the fiscal year just ended was 1% greater than last year.

State and municipal construction contracts, meanwhile, have been exceeding the year-ago pace. The margin is +4% to date and an 11% stepup in the second half would lift the full year about 5% over last year. State and local contracting this year will be little affected by the slowdown in new proposed public works because of the long average planning time required to prepare public works before calling for bids.

Federal aid for highways increases this year and the money is being made available some six weeks prior to the quarter-by-quarter schedule set up by the Bureau of Public Roads. Purpose of this advanced release is to encourage state highway departments to contract the work out as fast as possible.

Federal grants for sewage treatment plant construction are to be upped about 60% this fiscal year and raised again in each year 1963 and 1964. Moreover, the maximum grant per project will be larger and the program is to go on a new long-range basis that carries it through 1967. All of these changes would expand sewerage construction volume. The first impact is likely to spur sewerage construction contracts in the next six months to a still faster pace than the sharply increased rate of the first half of '61.

Under Washington pressures, state and local governments are likely to push contracting in a wide variety of other types of construction. Within the Housing and Home Finance Agency, the Community Facilities Administration several months ago began exhorting communities to push plans for new projects. CFA makes planning advances and construction loans to smaller cities and towns to finance all kinds of public works other than schools. CFA gets a big increase in its money—its authorization was jumped to $500 million in the Housing Act of 1961, whereas it had been authorized only $50 million for community facilities planning advances and public facilities loans. CFA also received another big chunk to use for making college housing loans—$1.2 billion to stretch over four years.

Adding its support to get swifter action on local construction projects in the planning stage will be the Urban Renewal Administration of the HHFA.

(*Please turn the page*)

The URA received a whopping $2 billion in the Housing Act of 1961 for making planning advances, planning grants, demonstration grants and for paying the federal share of net land costs of urban renewal projects. This money is expected to be released at the rate of about $600 million a year.

Both the CFA and the URA will direct their efforts mainly at modernizing and remaking the centers of population, big and small. As urban renewal lurches ahead, and land is prepared for reuse, private sponsors and public agencies can start constructing proposed housing, stores, and offices.

In private heavy construction during the next six months, look for commercial building and mass housing to increase, offsetting the weakness in the industrial building market.

Commercial awards should soar 21%, on its way to setting a record in contract dollars for the year as a whole.

Private mass housing, spurred at both ends of the price scale, will probably turn upward in the months ahead. Volume of contracts awarded plus projects announced by owner-builders should top the first half by about 13%. But this won't keep the 12-months volume from falling 6% short of last year.

A new experiment is aimed at stimulating low-cost housing, which is the mass homebuilder's meat. The Federal Housing Administration can insure mortgages of up to $11,000 (up to $15,000 in "high-cost" areas) with only a token down payment that can include closing costs and up to 35 years to pay (or 40 years for "hardship" cases). On the opposite end of the popular price scale, FHA can insure mortgages up to $25,000, instead of the former $22,500 ceiling. Moreover, down payments are cut and terms extended to a maximum of 35 years instead of 30 years. All of these moves combine to up the potential of the mass housing market.

The provision of the new Housing Act for FHA mortgage insurance on modernization loans, up to $10,000 for as long as 20 years could also stimulate homebuilding. It could aid the upgrading process by making it easier to prepare older houses for resale.

New plans climbed out of a slump in June (table, left), rising 24% above May and 10% over a year ago. Significantly, state and municipal projects sparked the rise as they reversed a downtrend of several months duration. The ENR Backlog of Proposed Work moved back close to its February '61 record.

Heavy construction contracts rose in June (table below), though not enough to match the large June '60 volume. First half awards dipped 2% under 1960 and 4% below 1956's record. However, the expected uptrend during the second half should push the 12-months total 2% over 1960 to a record $23.1 billion.

New Proposed Work Lifts the Backlog

ENR—Reported in millions of dollars

Type of Work	New Proposed Work January–June 1961	1960	Chg. %	ENR Backlog of Proposed Heavy Construction As of June 1961	1960	Chg. %
All Heavy Construction	10,537	12,322	−14	125,107	122,678	+ 2
By Ownership						
Private	5,876	7,003	−16	56,606	54,981	+ 3
Public	4,661	5,319	−12	68,501	67,697	+ 1
State and Municipal	4,271	4,621	− 8	54,652	53,637	+ 2
Federal	390	698	−44	13,849	14,060	− 2
By Type of Work						
PUBLIC						
Waterworks	443	197	+125	3,128	2,891	+ 8
Sewerage	455	325	+40	4,268	3,892	+10
Bridges	158	149	+ 6	3,244	3,345	− 3
Highways	677	1,547	−56	13,284	13,720	− 3
Earthwork, dams, waterways	296	110	+169	11,986	11,854	+ 1
Buildings	2,335	2,340	− 0.2	22,818	22,142	+ 3
Unclassified	297	651	−54	9,774	9,853	− 1
PRIVATE						
Commercial buildings	1,903	1,570	+21	28,293	26,621	+ 6
Mass Housing	1,703	3,199	−47			
Industrial buildings	1,764	1,847	− 4	17,450	17,713	− 1
Unclassified	506	387	+31	10,863	10,647	+ 2

Construction Contracts Up in June; First Half Dips Slightly

	June, 1961 New England	Middle Atlantic	South	Mid-West	Mississippi to Rockies	Far West	Total U. S.	% Change '60 to '61	Six Months U. S. Cumulative 1961	1960	% Change '60 to '61	Canada June 1961
Public Works, Total	50,591	203,112	267,312	246,585	261,079	248,012	1,276,691	−0.1	5,449,585	5,225,996	+ 4	88,582
Waterworks	772	3,767	8,115	7,159	12,959	9,647	42,419	−22	192,113	236,927	−19	1,353
Sewerage	4,272	7,651	13,287	25,878	13,260	18,597	82,945	+ 7	370,089	290,987	+27	8,076
Bridges	638	5,402	14,634	20,772	16,602	4,738	62,786	+30	288,670	400,373	−28	1,953
Earthwork, waterways	1,937	660	36,250	17,852	33,123	20,177	109,999	−22	447,880	428,660	+ 4	20,067
Streets and roads	16,029	75,836	93,124	68,259	100,513	65,478	419,239	+19	1,833,989	1,605,775	+14	24,832
Buildings: Residential	2,552	25,706	25,024	17,671	20,251	13,178	104,382	+ 6	405,141	302,187	+34	4,163
Other	18,524	73,988	40,672	81,060	47,437	52,767	314,448	+21	1,294,830	1,190,465	+ 9	24,083
Unclassified	5,867	10,102	36,206	7,934	16,934	63,430	140,473	−43	616,873	770,622	−20	4,055
State & Municipal	39,821	191,721	170,581	184,735	197,331	162,142	946,331	+ 6	4,152,210	3,933,501	+ 6	76,028
Federal	10,770	11,391	96,731	61,850	63,748	85,870	330,360	−14	1,297,375	1,292,495	+0.4	12,554
Private, Total	56,786	242,057	147,759	162,435	263,708	242,077	1,114,822	−31	5,480,271	5,885,977	− 7	104,624
Bridges								−100	90	1,499	−94	
Buildings: Industrial	14,382	22,010	47,530	18,657	79,670	63,419	245,668	− 8	1,522,358	1,291,752	+18	33,899
Mass housing	22,292	133,843	50,891	98,453	113,884	98,181	517,544	−43	2,440,691	2,920,897	−16	15,425
Commercial	19,927	80,101	34,280	42,623	60,401	78,843	316,175	+ 3	1,290,399	1,165,997	+11	20,006
Unclassified	185	6,103	15,058	2,702	9,753	1,634	35,435	−70	226,733	505,832	−55	35,294
Total, June 1961—5 wks.	107,377	445,169	415,071	409,020	524,787	490,089	2,391,513	−17	.....	.....	....	193,206
Total, May 1961—4 wks.	83,059	470,785	278,667	285,868	340,235	330,685	1,789,299	....	.....	.....	....	92,388
Total, June 1960—5 wks.	146,558	831,442	398,050	369,267	615,736	523,621	2,884,674	....	.....	.....	....	166,996
Six mos. 1961 (26 wks)	521,574	2,514,743	1,855,660	1,674,585	2,460,786	1,902,508	.....	....	10,929,856	.....	− 2	781,213
Six mos. 1960 (26 wks)	668,985	2,734,764	1,547,991	1,812,219	2,535,001	1,813,013	.....	....	.....	11,111,973	....	1,030,522
% Change '60 to '61	−22	−8	+20	−8	−3	+5	.....	....	.....	.....	....	−24

ENGINEERING NEWS-RECORD *reports U. S. (50 states) construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.*

New Mexico Moves to Clean Its Road Mess

New Mexico highway scandals have triggered a series of fast breaking events:

- The Bureau of Public Roads has temporarily embargoed federal-aid funds on most of the state's construction program.
- An official state delegation headed by the lieutenant governor has trekked to Washington.
- A deep-rooted political struggle between the State Highway Commission and the governor has been brought out.

The issue was forced into the open recently by a round of public hearings held by the special congressional highway investigating subcommittee headed by Rep. John A. Blatnik (D., Minn.).

When Chairman Blatnik finally gaveled his hearing to a close, a bizarre parade of scandals had been disclosed that left little doubt that New Mexico's road program was permeated with corruption (see editorial p. 96).

In all, the congressional investigators laid bare a record of state engineer-contractor relationships involving eight State Highway Department employees, and nine of the state's biggest contractors. All told, 140 contracts valued at $90 million were involved. Before the hearings came to a close, it was shown that over $48,000 had been paid out to state employees by contractors.

On June 29, six days after the congressional hearings closed, the Bureau of Public Roads took the stiffest action it has leveled on a state to date. It slapped a temporary embargo on all federal-aid money to the state for projects on which contractors named in the investigation had performed work.

The firms named by the BPR are: Jack Adams Construction Co.; Wylie Bros. Contracting Co.; Allison and Haney; Daniels Construction Co.; Allison, Haney and Daniels; D. D. Skousen and Sons; Dan D. Construction, Inc.; J. W. Jones Construction Co., Inc.; and Longenbaugh & Coe, Inc.

In addition, the Bureau stopped the state from advertising for new bids on federal-aid work or awarding any new contracts.

The Bureau of Public Roads will send a five-man investigating team to New Mexico to re-check federal-aid projects where doubts have been raised about construction quality. It will take the BPR team two to three months to complete its investigation.

Federal Highway Administrator Rex M. Whitton's order to the New Mexico State Highway Commission bluntly stated that federal-aid money to the state would be withheld until it put its house properly in order to "assure that the department has adequate control over and proper administration of the construction operations."

The severity of the BPR order has had a telling effect in New Mexico. The governor hurriedly sent a three-man delegation headed by Lt. Gov. Tom Bolack to Washington to confer with officials. The State Highway Commission has recommended the suspension of one contractor, Jack Adams Construction Co., by a three-to-two vote of the five-man commission. And, the eight State Highway Department employees implicated in the congressional investigation have been fired.

On July 14, too, the entire State Highway Commission is slated to meet with the Bureau of Public Roads in Washington to see what can be done to get back on the federal-aid roster.

Because of the Bureau's action, road construction in New Mexico has come to a virtual standstill. The nine contractors involved in the congressional investigation handle about 80% of the state's highway construction work. And, the state coffers can't carry construction ahead on a state funding basis alone. Tied up by the BPR order is anywhere from $60 million to $100 million worth of work.

Enmeshed in the current highway scandal in New Mexico is a deep-rooted political hassle between the governor and the State Highway Commission. State commissioners, once appointed to serve a six-year tenure of office, operate virtually as an autonomous body outside of the governor's control. This system was adopted seven years ago under a previous administration. Now, Gov. Edwin L. Mechem wants to bring the commissioners back under gubernatorial control where a new board would be appointed with each change of administration.

NSPE Urges Payola Penalties

Disciplinary action for engineers involved in construction scandals was urged last week at the annual meeting of the National Society of Professional Engineers in Seattle, Wash.

NSPE's functional section for consulting engineers in private practice, in its report to the board of directors, pointed out that investigation of the Interstate Highway Program "disclosed some instances of improper or unethical conduct on the part of a few engineers." It urged state societies to "take prompt and vigorous action to enforce the ethical standards of the profession" and to tell the public about it.

"All our public relations activities will avail us little if unethical conduct by engineers is disclosed to the public and ineffective action, or no action, is taken . . . to effect disciplinary steps," the report concluded.

Noah E. Hull, outgoing president of the society, told the delegates that the engineering profession "is currently facing grave damage in terms of public opinion as a result of an increasing number of disclosures regarding highly unethical conduct on the part of a few engineers." He charged that these "few engineers . . . are inviting federal and state legislation which would largely remove the regulation of engineering conduct and practices from the hands of the engineering profession."

Mr. Hull also urged action by state engineering societies "to weed out these incompetents and morally reprehensible engineers," warning that "we must police our ranks or face the certainty they will be policed by groups and individuals completely outside the profession."

On another front, NSPE's board of directors approved a policy statement offering the Peace Corps "direct assistance in the formulation of policies and procedures which will best insure the maximum contribution of the engineering profession" and suggesting that Peace Corps engineering projects "be handled through contracts with private engineering organizations."

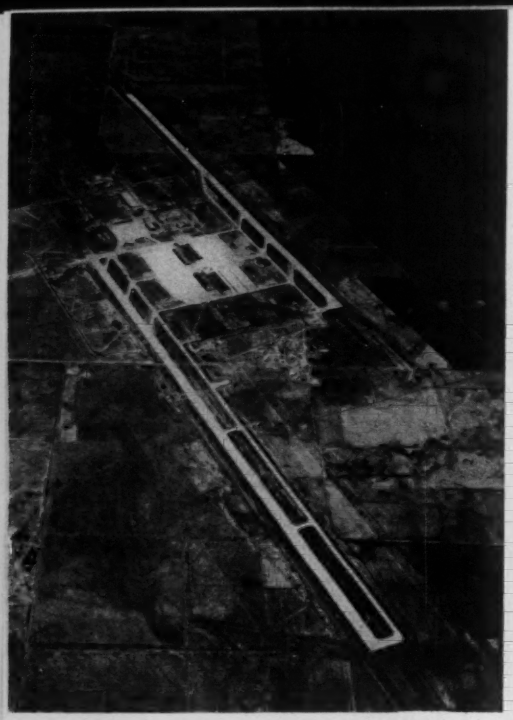
Murray A. Wilson, consulting engineer of Salina, Kan., was installed as new president of the society.

PE Licensing Chief Fired for Interference

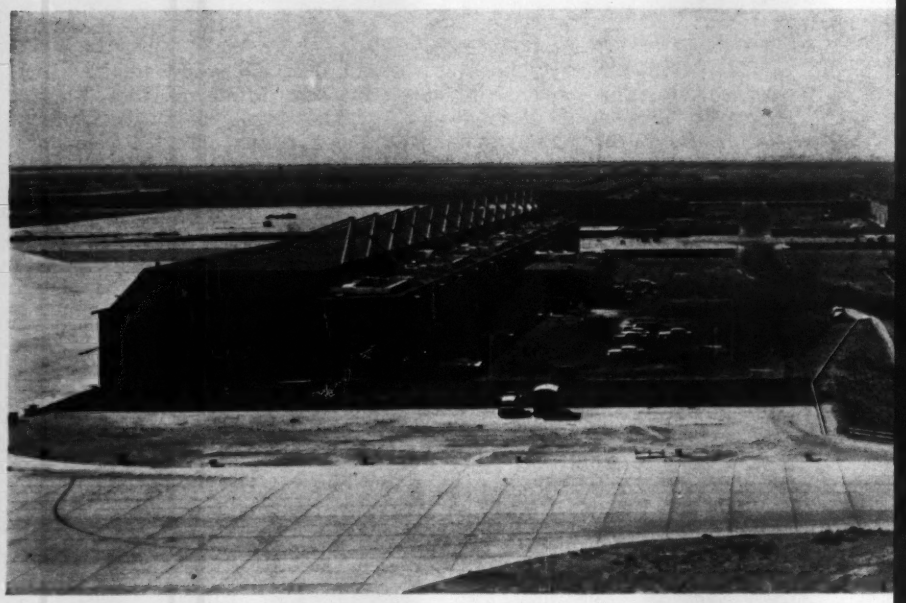
A backlash from Philadelphia's payola scandal struck Harrisburg last week with the firing of the administrative chief of the Bureau of Professional Licensing. William J. Kilroy was fired from his $9,500-a-year post for "interference with the procedures of some of the licensing boards." No specific charges were brought against him.

At a magistrate's hearing in Philadelphia, contractor Eli G. Travis testified that he gave Harold V. Varani, fired ex-chief of Philadelphia's Bureau of Architecture and Engineering, $750 "to get an engineering degree, or something like that." Mr. Varani's attorney denied this.

It was implied, but never actually charged, that the money went to influence the issuance of a professional engineer's license for Mr. Varani. The allegations prompted the interrogation of Mr. Kilroy and led to his firing.



Base site isolates jet noises.



Four jet hangars, 800 ft long, built with compound cantilever truss

Unrushed Navy Builds Jet Base

Dedication ceremonies last Saturday marked substantial completion of the Navy's newest—perhaps its last—jet air station.

In mid-1957, the Navy's top planning board gave this order: Build a complete master jet air station at Lemoore, Calif.; have it finished by July 1, 1961; and limit expenditures to $84 million.

With the first jet squadron moving in late this month, completion has been on schedule. And military construction funds expended or obligated total $81 million, well within the spending limit. Additional funds for 1,300 Capehart housing units and for base equipment not included under military construction appropriations bring the cost to more than $100 million.

Located in the flat, semi-arid San Joaquin Valley, some 35 miles southwest of Fresno, the new air station centers on two 13,500-ft-long by 200-ft-wide runways with an accompanying complex of parking aprons and taxiways (one taxiway is prestressed concrete—see box, right). Operational facilities include four 800-ft-long, steel-framed, group hangars. The 150-ft width of these structures includes 80 ft of clear span, and each building is fully air cooled.

There are three basic reasons why time and money schedules have been met at Lemoore:

- This was not a crash program.
- Spacing of contract awards eliminated high peaks in the construction effort.
- Navy officials administered changes with great care.

Planning the work at Lemoore started about eight years ago. Over the four years of construction, the maximum value of contracts under way at any one time was limited to about $25 million. No critical labor shortages were developed that would tend to inflate subsequent bids.

There were 61 formal construction contracts, 16 costing more than $1 million. Navy officials awarded the first and biggest contract in May, 1958, to Griffith Co. of Los Angeles for $14.6 million to construct the runways and the basic taxiway system.

Even though the construction program had been carefully planned, there have been changes. Some of these changes result from technical advances —for example, a complete modification of the airfield lighting system—but most are the type normally encountered in big construction programs.

Officials are convinced that careful handling of change orders has been a key to keeping the cost of Lemoore within its budget. Where possible, the Navy made changes the subject of new

Builders Try Prestressed Taxiway

A 512 x 75-ft taxiway at Lemoore Naval Air Station is the second prestressed concrete airfield pavement section in use in the U. S. The first was built two years ago at Biggs Air Force Base near El Paso, Tex. (ENR Aug. 20, 1959, p. 32).

Both the Lemoore and Biggs prestressed taxiways are considered experimental, because not enough was built in either case to develop production line construction techniques. (The Biggs taxiway is 1,550 ft long, built in three 500-ft sections with filler slabs.)

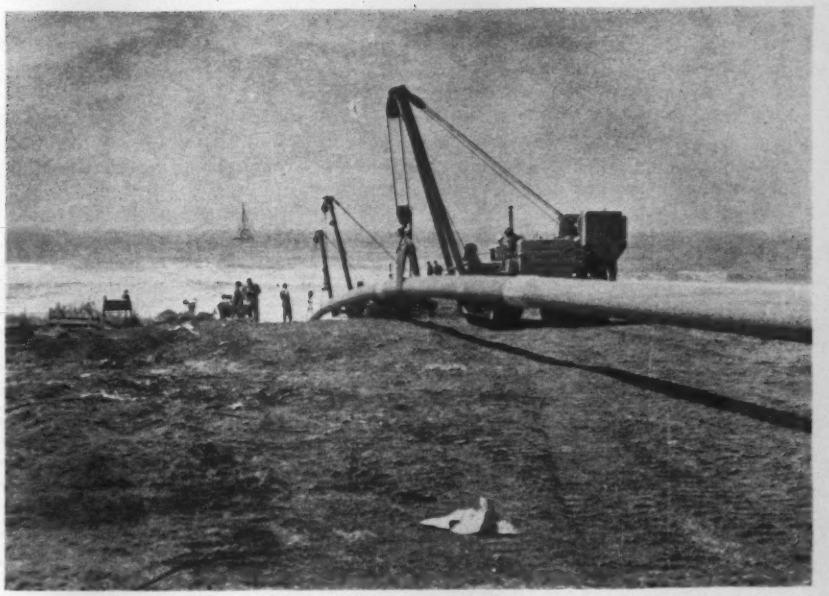
The purpose at Lemoore is to test installation procedures and to measure long-term maintenance and performance.

More extensive prestressed pavement was seriously considered. During the planning stages for Lemoore, Navy officials recommended that the runways be prestressed. This was overruled in Washington as too experimental for an operating base.

The taxiway at Lemoore is designed for 90,000-lb loading on dual tires inflated at 200 psi pressure—this is comparable to commercial jet loadings, but less than heavy bomber loadings. A 6-in. thickness for the central 25-ft increases to 9 in. for the 10 ft on each edge of the 75-ft-wide taxiway. This substitutes for a 12-in. unreinforced slab on the same subgrade. (The Biggs AFB taxiway has a uniform 9-in. thickness substituting for a 24-in. unreinforced thickness.)

The Lemoore taxiway is fully instrumented to determine stress effects under

roofs have 80-ft clear depth.



Fuel line, 90 miles long, links Lemoore with tanker mooring.

on Schedule at the Right Price

competitively bid contracts. When it was not feasible to award a new contract, change order cost negotiations were based on estimates prepared by the contractor, the architect-engineer and the Navy.

The Navy minimized change order charges for overhead, allowing a normal overhead charge of 10%. Much of the work at Lemoore—particularly on buildings—was subcontracted by the various general contractors. And in many cases, the subs had subcontractors for part of their work. The Navy reasoned that a subcontractor might incur an overhead expense due to a change order that would not necessarily be incurred by the general contractor at least to the same degree. So the Navy allowed the full overhead charge of 10% of the actual cost of the change only once.

One unusual set of bids for the Lemoore work involved delivery of jet fuel. The Navy figured what it would cost to build and operate a 90-mile pipeline. At the same time it received bids for delivering fuel by other means. The pipeline won out.

During the design period, San Francisco consulting engineers, Earl & Wright, made an analysis of the best way to get large quantities of jet fuel (JP-5) to Lemoore. They recommended that the Navy build a pipeline 90 miles to Estero Bay on the California coast. This system would permit large tankers to discharge from a mooring facility in the bay through a 16-in. line to a pair of 131,500-bbl tanks a half mile from the moorage. A pumping station at Estero Bay can move the fuel at a 300-gpm rate through the 6-in. pipeline to Lemoore. Storage at Lemoore includes four 13,500-bbl underground tanks and four smaller, 2,500-bbl tanks.

Lemoore Naval Air Station replaces the San Francisco Bay Area's Moffett Naval Air Station insofar as naval jet air operations are concerned. Modern jet operations require longer runways than are available at Moffett. And to extend Moffett's strips would require extremely expensive fill operations in the San Francisco Bay.

Other factors leading the Navy to move its jet air operation from the San Francisco Bay Area were air-lane congestion and noise.

Lemoore NAS provides direct support for the fleet units. It will be the home port for a number of jet air squadrons, with 300 planes normally based there. For operational purposes, these squadrons will be rotated as needed to various aircraft carriers in the Pacific Fleet.

Lemoore is the only complete new master jet air base built by the Navy in recent years. It is one of several such installations located in coastal areas of the U.S. And with its commissioning, operation of such bases on the Pacific

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both short-term and long-term loading. The air station is not yet in service, so no real results have been obtained. Engineers made plate-loading tests and found that the installation exceeded the predicted load-carrying capacity and could safely carry 150,000-lb loads, compared with the 90,000-lb design load.

During construction, the Navy learned some things that might be useful in future installations:

- The double layer of polyethylene plastic between the cement-treated base and the concrete slab provided a satisfactory friction plane for the prestressing operations. This might lead to relaxed tolerances in placing the prestressing tendons.
- Specifications required the tendons to be placed with a tolerance of plus or minus ⅛ in. This proved difficult to achieve and Navy engineers now think that a greater tolerance—say plus or minus ¼ in.—could be allowed without adverse effect.

During the curing period, inspectors found several soft parts in one area of the taxiway. They attributed these to accidental overdose of the retarding admixture. The contractor chipped out two of these soft spots and patched them with high-early-strength concrete bonded to the existing slab with epoxy resin materials. Neither patch caused any apparent difficulty during subsequent stressing operations. Concrete apparently can be patched prior to stressing operation, the builders conclude.

Coast will be streamlined for greater efficiency.

At Lemoore, the Navy has large areas of relatively flat land available at relatively low cost. The Navy acquired nearly 50 sq mi for the air station, including an area approximately 10 miles long by 3 miles wide for military construction and housing purposes. Surrounding this is another 20 sq mi for which the Navy has acquired a navigation easement. This land is not owned outright, but is restricted primarily to farming use. No living being—man or animal—can be quartered in this area. In addition, county governments have established a "green belt" completely surrounding the area. This two- or three-mile-wide strip is zoned primarily for farming use.

Navy officials wanted all this space to provide separation of living facilities and operational facilities for noise attenuation purposes.

The new base demonstrates conclusively that the best answer to noise created by jet aircraft is distance. Unhampered by existing facilities, the designers concluded that separation of living and operational facilities was less expensive, due to low land costs, than soundproofing buildings in the administrative and housing areas.

Lemoore Naval Air Station is a project of the Navy's Bureau of Yards & Docks under Rear Adm. E. J. Peltier, Bureau Chief. Capt. Joseph White, 12th Naval District Public Works Officer, is in direct charge of the design and construction. Capt. V. C. Bertelsen is resident officer in charge of construction.

Dam Congress Spotlights Foundations

By Waldo Bowman

In a Rome convention hall a few blocks from the Forum of the Caesars, experts in dam design and construction from around the world have concluded five days of discussions on ways and means to improve their art. The occasion was the Seventh International Congress on Large Dams. And though the oratory seldom invoked comparison with that of the ancient Roman Senate, it nevertheless caused audiences of upwards of 1,000 to "lend their ears" to varied and important pronouncements on four aspects of dambuilding.

These related to concrete aggregates, underground construction, concrete dams for wide valleys, and methods of sealing earth and rockfill dams with bitumen and other materials. None of the 150 preprinted papers was presented, but they were analyzed in four general reports and discussed from the floor.

The spotlight was on the underground construction papers, not only because this was a new subject to congress agendas, but because of the heightened concern over dam foundations since the Malpasset Dam collapse, which has been attributed to movement in the rock abutments (ENR Dec. 10, 1959, p. 24; Apr. 7, 1961, p. 25; June 29, 1961, p. 22).

Actually underground construction was picked as one of the congress questions before the Malpasset failure.

Delegates stated frequently that we already know how to build dams with greater factors of safety than we could accord to their foundations at the present state of our knowledge. It is obvious that the immediate future will witness a great emphasis on further development of the science of rock mechanics.

Subjects for investigation mentioned in the 38 papers and 22 discussions relating to this question were methods of in-place rock testing, methods for determining rock perviousness and moduli of elasticity and means of reducing water pressure in cracks. Rock bolting, grouting and other procedures for improving rock quality were also mentioned. In addition, there was noted a great need for information on rock pressures in tunnels and on the interaction of rock and concrete over long periods of time in dam foundations.

Determining more surely the presence and extent of faults, cracks and weathered zones at dam sites by improved exploration methods was recognized as a basic necessity. And the opportunities for such exploration afforded by underground power plant construction, by tunneling and by sinking shafts and trenches preliminary to grouting and cutoff wall construction were emphasized in many of the papers.

The congress was the largest ever held, with a total registration of 1,500. It elected Claudio Marcello, head of the hydroelectric department of the Societe Edison of Milan, as its new president to serve for the next three years. He succeeds Jose Filipe Rebelo Pinto, technical director of the Ministry of Public Works of Portugal.

Two new vice presidents were also elected. Jack K. Sexton, director of civil engineering of the Montreal Engineering Co. of Canada, succeeds Francis S. Friel, consulting engineer of Philadelphia, as vice president for America. And Mahmoud Mohamed Gadein, director of the Ministry of Irrigation and Power in the Sudan, succeeds A. A. Borovoy of Russia.

The next congress will be held in 1964 in Edinburgh. The executive committees of the 50 member nations of the International Commission on Large Dams will meet in Moscow in 1962 and in Cairo in 1963.

*Killing two birds with one stone, **Editor-in-Chief Waldo Bowman** covered the dams congress for ENR and at the same time represented the U.S. Committee on Large Dams as a member of its executive committee. Both he (from Rome) and ENR's Ernest Conine (from Moscow) funnelled information to New York on Russia's plans to build the world's highest dams (story at right).*

Soviets Start Highest Dam

Russia has started construction on an earthfill dam 990 ft high and plans to start on a concrete arch of the same height, according to A. A. Borovoy, Soviet chief of power design and construction.

Mr. Borovoy told delegates to the Seventh International Congress on Large Dams, meeting in Rome, that the earthfill, Nourek Dam, will be located on the Vakhsh River, southeast of the Caspian Sea. The concrete structure, Ingouri Dam, will be built on the Ingouri River west of Stalingrad, he said.

Nourek Dam will have a vertical clay core. It will stand in a narrow gorge. The project includes a 2.7-million-kw powerhouse above ground and 2.5 miles of 35-ft-dia tunnel.

The Ingouri project will include a 9.5-mile-long intake tunnel 33 ft in diameter and an underground power plant. The tunnel will have a 16-in. lining of concrete, the design of which will permit a limited amount of cracking—a new concept the Russians have developed. Another new idea, which may be adopted, will be to give the tunnel an oval instead of a circular cross section. The cross section will be made up of semicircles at each end with a rectangular insert between. This is said to reduce the bending moment at the center line and permit a thinner lining. It is especially applicable to zones of highly disturbed rock or soft ground.

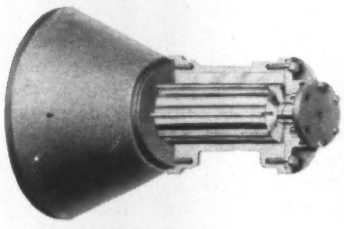
The world's highest dam at present is Grand Dixence, a 922-ft concrete gravity structure in Switzerland. The highest embankment is Trinity Dam, 537 ft, in California. Oroville Dam, California, is planned as a 730-ft-high earthfill.

MONO-ROTOR PROVEN...WARRANTY QUADRUPLED

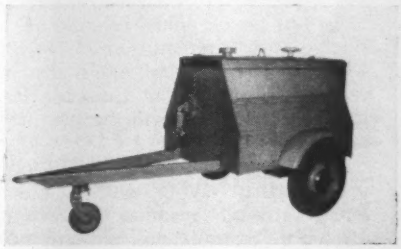
The new line of Worthington Mono-Rotor compressors has gained extensive field experience with outstanding success. Performance has been so successful, in fact, that Worthington has lengthened its warranty period from 3 months to one year. It is the first major construction industry compressor manufacturer to do so.

Mono-Rotor units have proven themselves in widespread areas over the last 3 years. They are in locations ranging from New York City to Hawaii—from Alaska to Argentina. Service conditions have ranged from the intermittent use in winter and summer to three-shift use for months at a time.

What makes the Mono-Rotor compressor so dependable? It is extreme simplicity.



MONO-ROTOR: 1 STAGE... 1 ROTOR... 2 BEARINGS... NO GEARS... NO OIL PUMP



NEW 125′ MONO-ROTOR BLUE BRUTE

It actually has 63% less parts than its two-stage predecessor. The Mono-Rotor has just one stage, one rotor, two bearings, no gears and no oil pump. No other compressor design is so simple.

The new Worthington Mono-Rotor compressors have other benefits, too. They are 20% lighter in weight and are designed for improved towing and tracking. The 3rd wheel is standard equipment for easier handling on the job. It runs all day on a tank of fuel. There's an engine-saving clutch and many other features.

The Mono-Rotor can now be ordered in the 85′, 125′ and 250′ sizes. See it . . . rent it . . . or buy it at your Worthington dealer listed in the Yellow Pages under "compressors". Or write Worthington Corporation, Dept. 60-39, Holyoke, Mass. In Canada, Worthington (Canada) Ltd., Brantford, Ontario.

WORTHINGTON

PRODUCTS THAT WORK FOR YOUR PROFIT

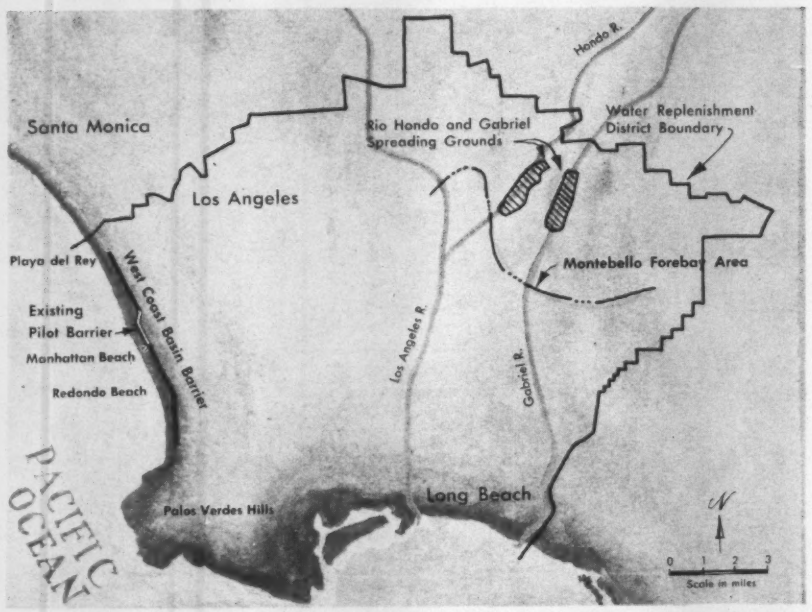
Wall of Wells Will Hold Back Pacific

The Los Angeles Flood Control District has launched a groundwater protection and replenishment program that will cost $24 million in the next five years. About one-third of the money will go for construction of recharge wells and pipelines, the remainder for purchase of water.

The program dates back to a pilot line of fresh water injection wells installed at Manhattan Beach in 1951 to halt seawater intrusion (ENR Oct. 11, 1951, p. 73).

The success of this 1¼-mile-long barrier spurred the Flood Control District in 1957 to authorize a feasibility study for extending the barrier along the west coastline from Playa del Rey to the Palos Verdes Hills. Two south coast barriers and groundwater recharge in the inland Montebello Forebay area were also included in the study (ENR May 2, 1957, p. 24).

The first phase of the $850,000-study is complete and includes details of two projects—the West Coast Basin Barrier and the Montebello Forebay Recharge Project. Phase two of the report will be presented within the next few months and will deal with seawater intrusion along the county's southerly coastline.



Line of fresh water injection wells will halt seawater intrusion.

• **Salt water intrusion barrier**—The West Coast Basin Barrier Project calls for extension of the Manhattan Beach barrier north to a point above El Segundo and south to the Palos Verdes Hills. The existing Manhattan Beach installation consists of 12 injection wells, which protect about 8,200 ft of coastline.

The extension, now under way, involves construction of 62 recharge wells —16 to the north and 46 south of the existing wells at Manhattan Beach—creating a line of wells roughly 11 miles long. The project also includes about 200 observation wells, pipelines to distribute water between wells, plus a supply line to bring an estimated 50,000 to 61,000 acre-ft of water annually to the recharge barrier.

Observation wells are now being drilled in the critical area of Redondo Beach. The Flood Control District, which carries out the work financed by the regional replenishment district, plans to award a contract in September for the supply pipeline to the Redondo area. Completion date for the pipeline and 10 to 12 recharge wells in the same area is set for early 1963.

• **Groundwater replenishment** — The Montebello Forebay Recharge Project entails replenishment of groundwater in the Central basin by spreading water over permeable outcroppings that link with the artesian aquifers (water-bearing strata).

Removal of groundwater in both the Central and West Coast basins has exceeded the natural replenishment for years. The overdraft caused a hydraulic gradient inland from the ocean. Aquifers not protected from the sea by natural geologic barriers have been increasingly threatened by seawater intrusion.

• **Where water comes from**—Colorado River water from the aqueduct and distribution facilities of the Metropolitan Water District is used for both projects.

It's estimated that MWD will have surplus water until the early 1970s, and the flood district plans to make maximum use of water for recharge from now on.

Anticipating the day when MWD water use catches up with its supply, the Flood Control District study says reclaimed sewage effluent should be considered as an alternate source of supply when higher priority water demands reduce the quantity of Colorado River water available for maintenance of the barriers.

Four irrigation districts have higher priorities than MWD's on the Colorado River water now claimed by California. Under a new system of allocations before the U. S. Supreme Court, claims by Arizona and Nevada also would take priority on more than half of MWD's present allocation.

• **Double-barreled program**—The Flood Control District is now checking out rapid sand filtration equipment to be used in tests over the next two years. Treated effluent will be taken from Los Angeles' Hyperion plant and given tertiary treatment.

The Los Angeles Sanitation District is about to start a 10-mgd sewage effluent reclamation plant at Whittier Narrows and the replenishment district will buy the reclaimed water and spread it for percolation in the Montebello Forebay area.

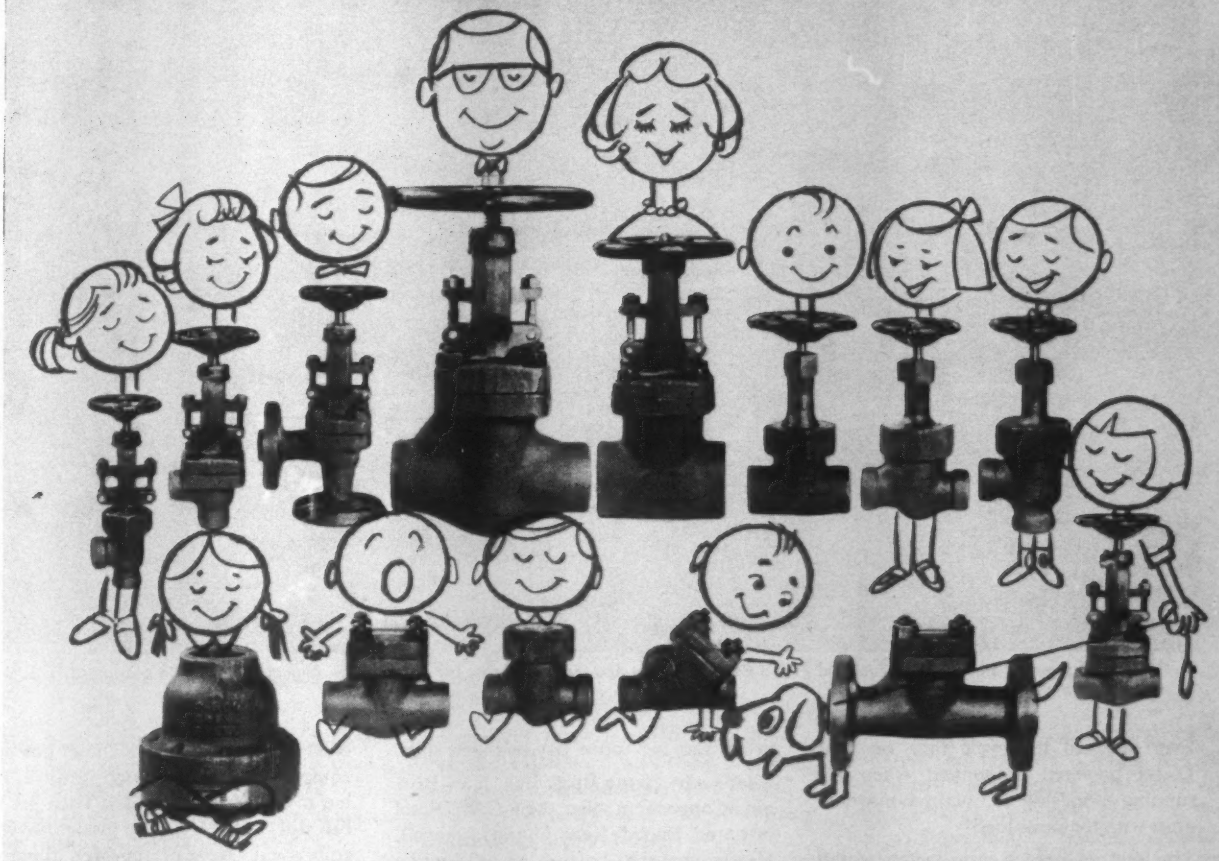
• **Financing**—The Flood Control District has had various projects under way since the early 1950s for controlling salt water intrusion and water basin replenishment, but the lack of an overall plan and fund shortages have limited activities.

However, in 1959 voters okayed creation of the Central and West Basin Water Replenishment District (ENR Dec. 3, 1959, p. 28). This established a permanent agency to provide the needed financing, through groundwater pumpage assessments, for large-scale conservation and the coordination of operation of the groundwater basins.

Funds for both the barrier and forebay projects are supplied jointly by the water replenishment district, flood control tax districts in the same general area, and the flood control district's general fund.

Costs for the projects from this year through fiscal 1966-67 are about $16.2 million for the purchase of Colorado River water; $5.2 million for construction work on the barrier project; and $2.5 million for operation and maintenance at both projects.

CRANE'S LARGE FAMILY OF SMALL STEEL VALVES



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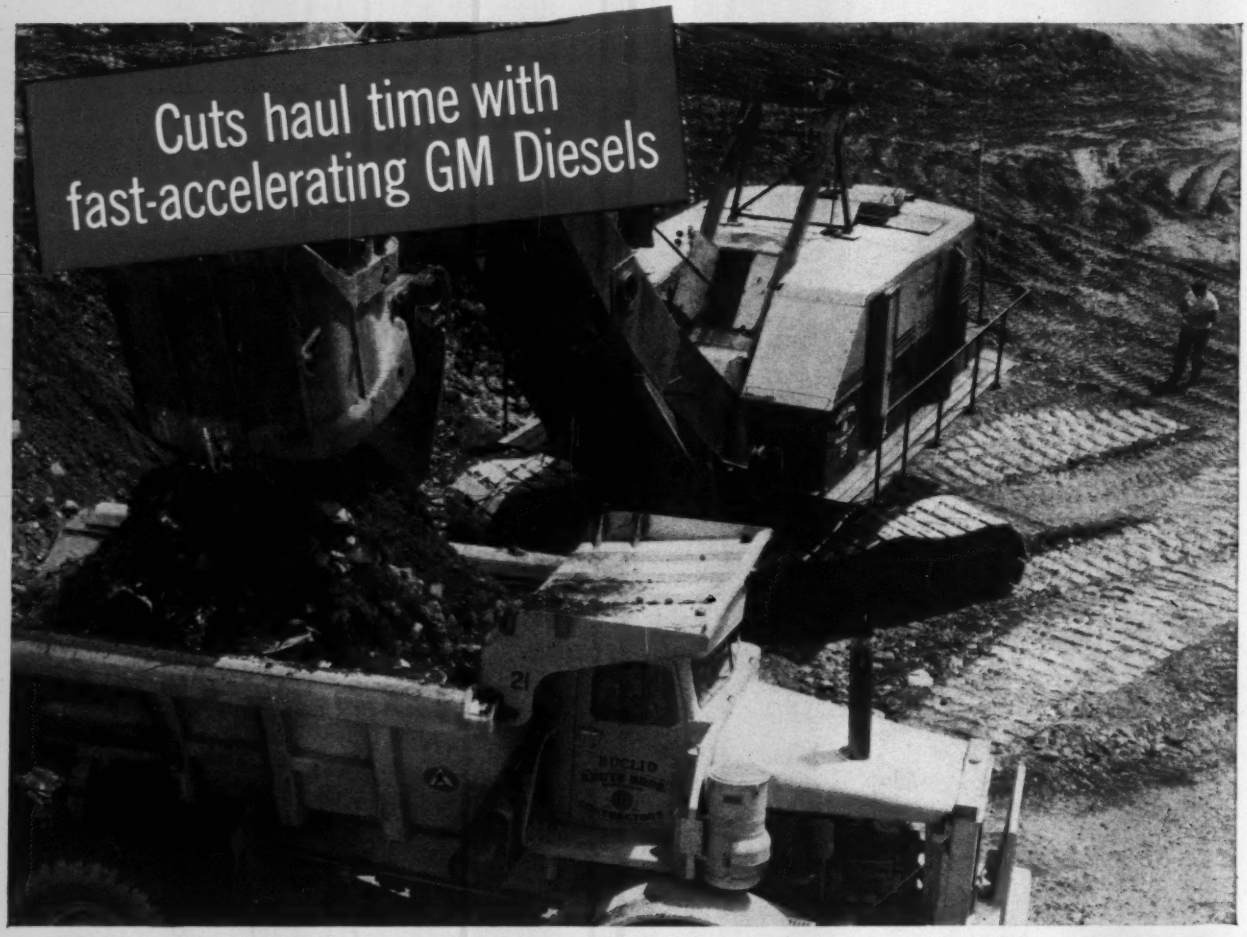

GM Diesel powered Bucyrus-Erie 71B and Euclid Rear Dump, owned by Arute Bros. Inc., at work on relocation of 3-mile section of U.S. 6 near Waterbury, Connecticut

Ever checked the cycle time on GM Diesel powered equipment when it's running alongside competitive-powered units with the same load?

You seldom need a stop watch to tell you which one's moving faster.

When the "Jimmy" picks up the load it does it *right now!* Power on every piston downstroke lets the GM Diesel grab hold and wind up to governed RPM faster, lopping seconds off every job cycle, moving more payload per shift.

That's why Arute Bros. Inc., New Britain, Connecticut, like their GM Diesel powered Euclid Rear Dumps so well. Here's what they have to say—"We like the fast acceleration of the GM Diesels. They give us better time on the unleveled haul roads on the project."

Arute Bros. rely heavily on GM Diesel power—have other "Jimmys" working in compressors, shovels and loaders.

Next time you see GM Diesel powered equipment at work, watch it move. Listen to it pick up the load. Then get the full story. Check on the model for your equipment. New or repower, there's a GM Diesel to fit. Because of wide parts interchangeability, parts cost less, overhauls too. See your GM Diesel Distributor. He's in the Yellow Pages under "Engines, Diesel," or write direct.

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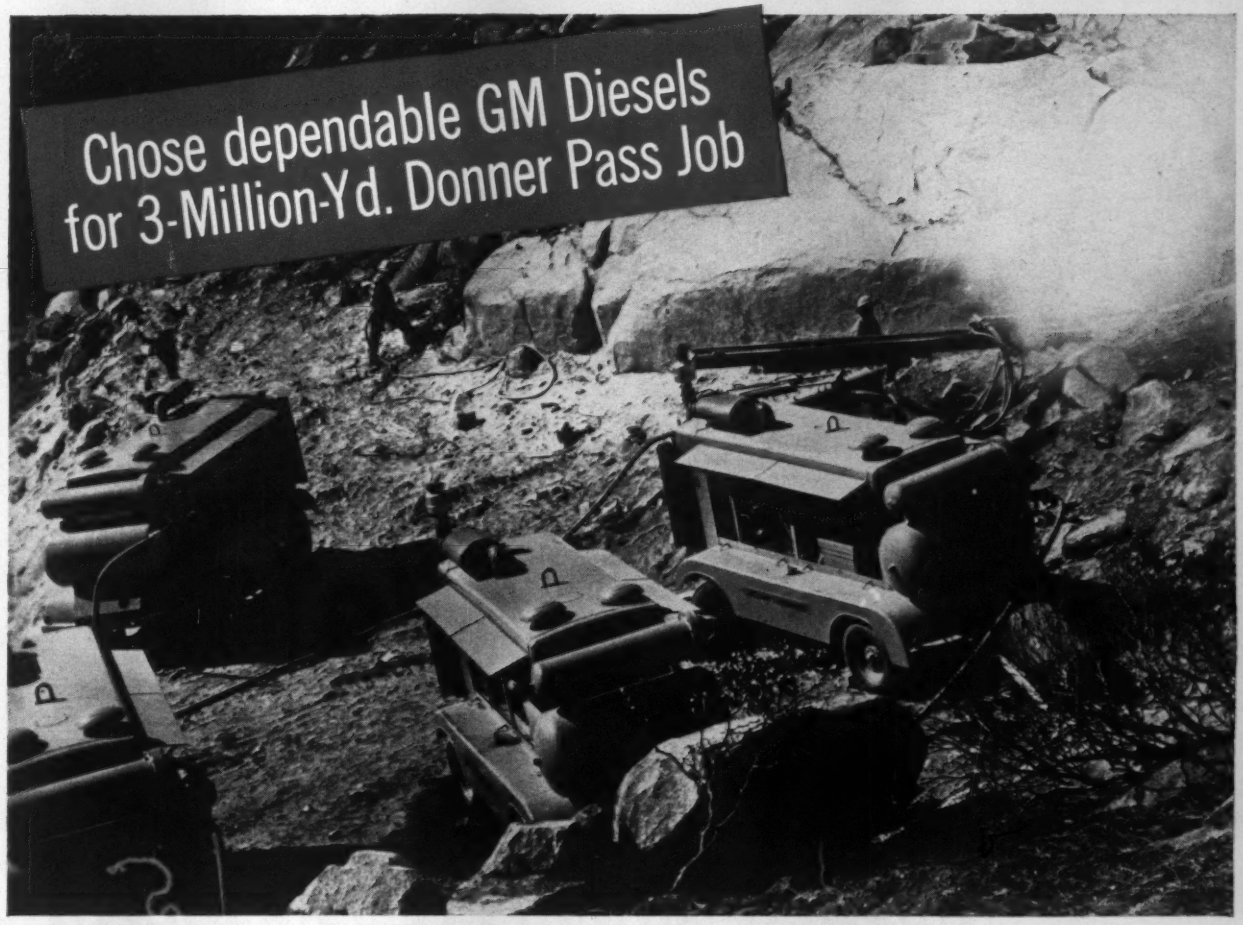

GM Diesel powered Chicago Pneumatic 600 cfm compressors at work for Briggs-Conley-Dennis relocating 7 miles of U.S. 40 near the summit of Donner Pass, California

When you have 3 million cubic yards of mountain to move—and have to work at a 7,000-foot altitude to do it—you need Diesels that will put out, and keep on putting out,with no pampering.

That's why Briggs-Conley-Dennis chose GM Diesels for this job in the rugged Donner Pass area of California's High Sierras.

Earl Blake, project manager on the joint venture, says, "GM Diesel engines were selected for this equipment because of our past experience with these engines, their known dependability, lower maintenance costs and their greater operating efficiency at high altitude."

Briggs-Conley-Dennis used 15 "6-71" GM Diesel powered Chicago Pneumatic 600 cfm compressors to power their rock drills—16 Euclid 65TD Rear Dumps with "6-110" "Jimmys" on the rock hauls.

How about you? Ready to repower or buy new equipment? There's a GM Diesel to fit your equipment. See your GM Diesel Distributor. He's in the Yellow Pages under "Engines, Diesel." Or write us direct.

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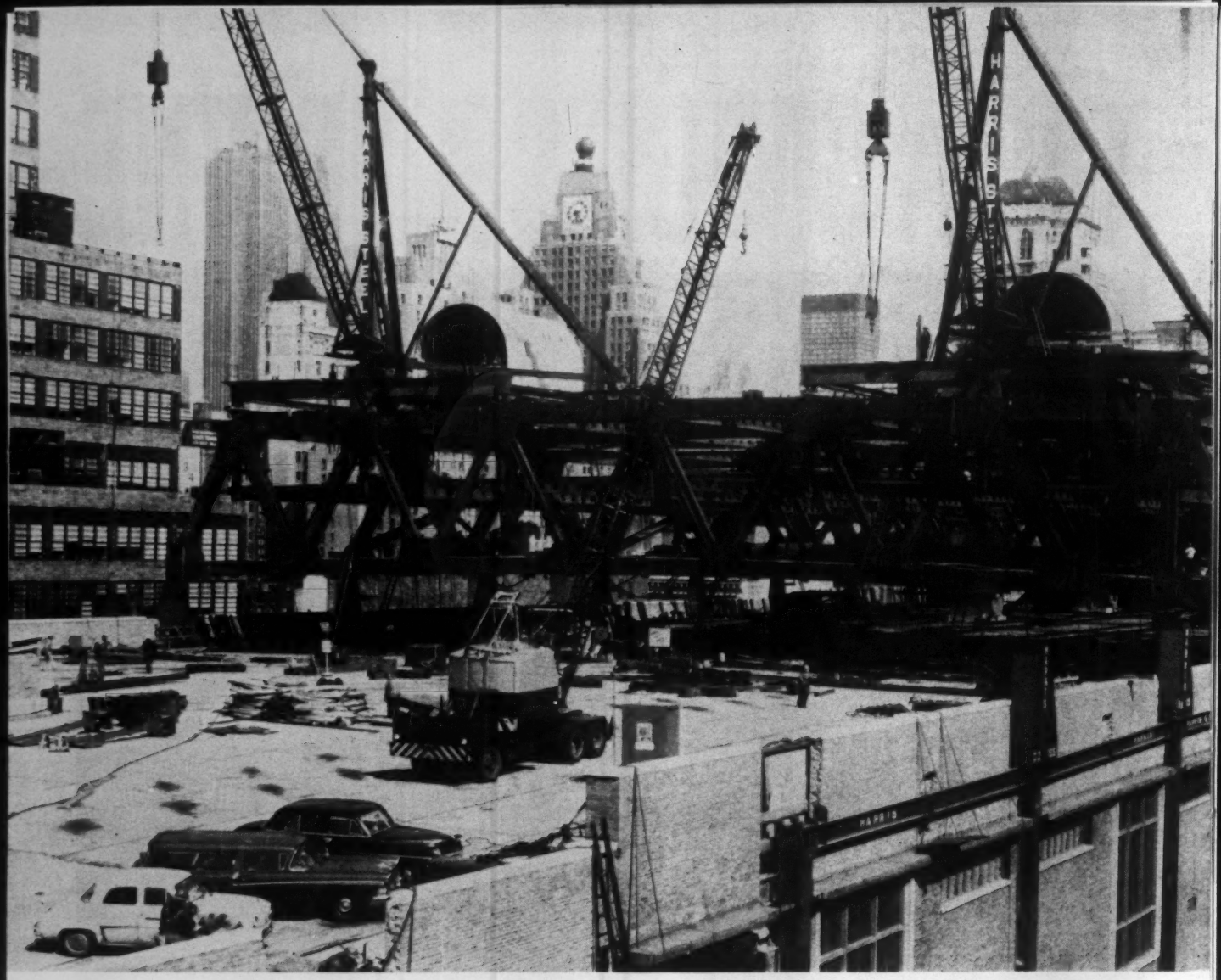
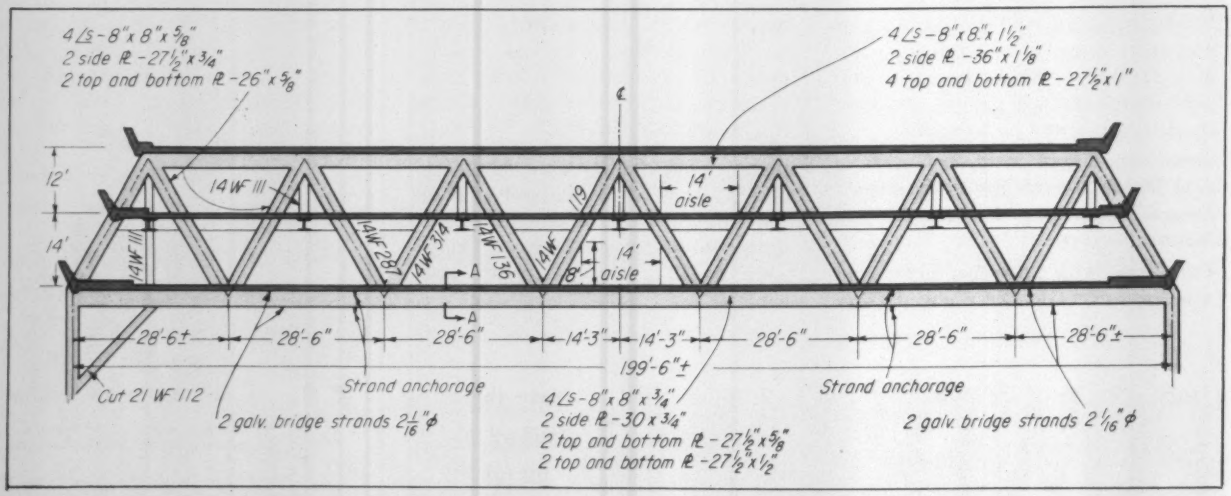


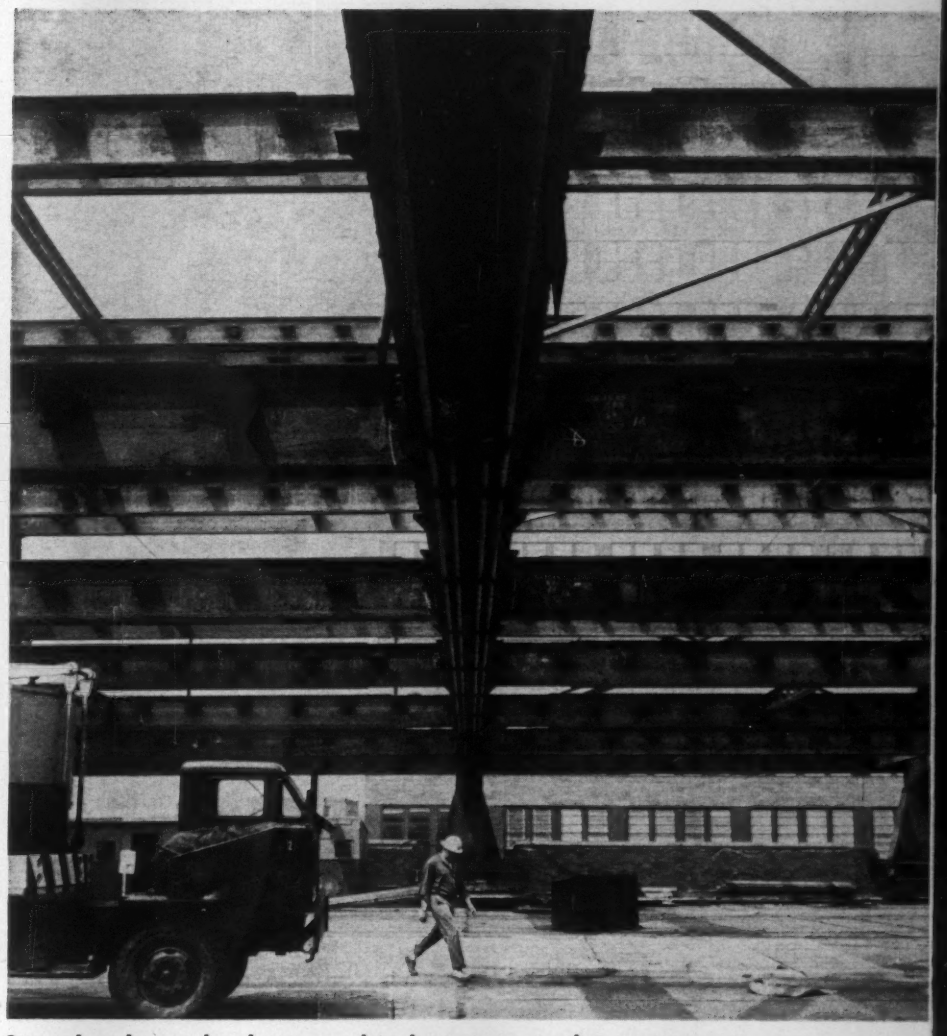
Trusses to carry 3-story addition span across New York City bus terminal on columns that are

Trusses Carry Parking Decks


4 L's - 8" x 8" x 5/8"
2 side PL - 27 1/2" x 3/4"
2 top and bottom PL - 26" x 5/8"
4 L's - 8" x 8" x 1 1/2"
2 side PL - 36" x 1 1/8"
4 top and bottom PL - 27 1/2" x 1"
12'
14'
14 WF 111
14 WF 119
14 WF 111
14 WF 287
14 WF 314
14 WF 136
14 WF
14' aisle
14' aisle
8'
28'-6"±
28'-6"
28'-6"
14'-3"
14'-3"
28'-6"
28'-6"
28'-6"±
199'-6"±
Cut 21 WF 112
2 galv. bridge strands 2 1/16" ϕ
Strand anchorage
4 L's - 8" x 8" x 3/4"
2 side PL - 30 x 3/4"
2 top and bottom PL - 27 1/2" x 5/8"
2 top and bottom PL - 27 1/2" x 1/2"
Strand anchorage
2 galv. bridge strands 2 1/16" ϕ

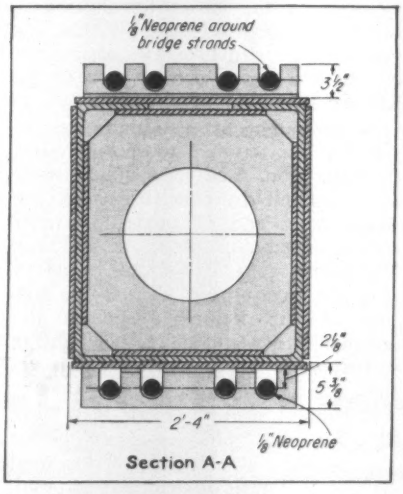
Two decks frame into top and bottom chords. The third deck hangs between them.

set outside the building walls.



Strands along the bottom chords prestress the trusses.

200 Ft Across Terminal Roof



Section A-A through chord.

Steel just topped out over an 11-year-old New York City bus terminal deceives the casual spectator into asking: Why such heavy framing for only three additional stories?

The answer, in brief: The steelwork has to carry heavy loads over a 200-ft span. In fact, the steel would have been much heavier if the trusses hadn't been prestressed.

The existing roof provides 144,000 sq ft of unobstructed parking area. And it will still be clear of structural obstructions after contractors finish overhead framing that will carry three new parking levels for automobiles.

Main supports are fifteen 200-ft-span Warren trusses. They carry decks at the top and bottom-chord levels and midway between them (ENR Dec. 1, 1960, p. 32).

• **Parking proves profitable**—Port of New York Authority engineers designed the existing roof as a future bus loading deck; but from the start, it has been used for parking passenger cars. The designers didn't anticipate how profitable the parking concession would be—it has netted over $400,000 a year. With bus-terminal ramps connecting directly to the Lincoln Tunnel, which runs under the Hudson River, the parking facility is so conveniently accessible to New Jersey commuters that they have kept the 450-car-capacity roof full from the time it opened in 1950. Parking revenue goes to support terminal operations.

When expansion of the bus terminal became necessary and the existing parking roof had to be given over to busses, PNYA engineers decided to add three

levels for passenger car parking. These will provide over 1,000 car spaces.

• **No interior columns**—Two reasons led the designers to span the 720x200-ft terminal without interior columns: The existing frame could not take the added loads of more floors; and interior columns would hamper bus operations and cut through tenant space in the terminal below.

To support the 200-ft trusses, the designers called for new columns at 50-ft intervals. These stand outside existing columns in chases cut in the exterior brick walls. Additional footings tied to the original foundations are the only load bearing connections between old and new work.

Harris Structural Steel Co., the steel contractor, used 45- and 60-ton truck cranes in the street to set the 60-ft-high, cover-plated 14WF320 columns. Harris then placed 12-ft high rocker-bearing "stems" atop the columns to carry the trusses.

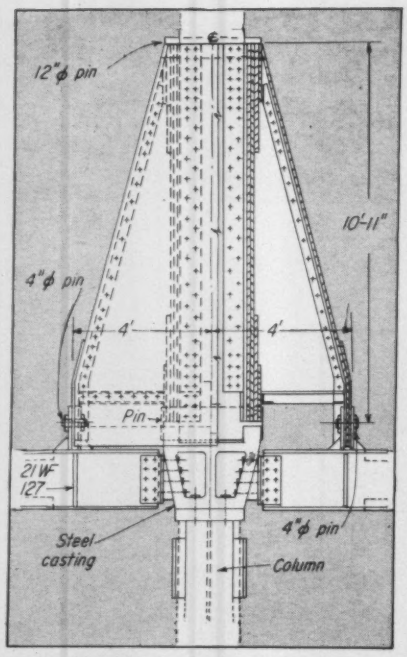
These stems are roughly triangular in elevation, 28 in. thick with 8-ft-wide bases. Made of steel plate, they are 28-in. square box columns with triangular front and rear cover plates. Lower bearings are cast steel shoes. Top bearings are seats cut in the edge of the column plates.

Each end of a truss connects to a bearing with a 12-in.-dia forged steel pin. A similar pin at the stem base connects to the column below. At the outer ends of the triangular base, 4-in. dia pins connect the stem's cover plates to spandrel beams spanning between the steel shoes on the column tops. These two pins only stabilize the assembly longitudinally; all loads from the structure above pass down through the box column and the 12-in.-dia pins.

In the completed structure, a knee brace at one end of each truss stabilizes it laterally in the truss plane.

Harris erected all steel for the trusses and parking decks from the roof to keep interference with traffic to minimum. Starting at the east end of the terminal, Harris set up two 55-ton capacity guy derricks on the existing roof to erect the first two trusses. After these trusses were erected and riveted, a pair of 75-ton capacity traveler derricks, assembled on top of the trusses, handled the steel to the other end of the terminal.

Erecting the trussses on the bearings required temporary supports until connections were made. For falsework, Harris set six temporary posts on the roof as each truss went up. These rested on grillages that transmitted the load to two existing columns below each support. On the posts, hydraulic jacks of 150-ton capacity allowed adjustment during truss erection.



BOX COLUMN in rocker bearing carries truss loads; pinned cover plate only stabilizes.

Harris erected the bottom chord in three sections, then the truss diagonals, a 67-ft-long section at the center of the top chord and finally the rest of the top chords. One derrick usually picked the members off trailers in the side streets, but for heavy, center sections, both derricks placed the members. Main deck framing members and diagonals in the top deck tie and stiffen the terminal structure.

Riveting crews completed all truss connections with high-strength ASTM A195-57 rivets. Other field connections were either riveted or bolted.

At the far end of the terminal the derrick procedure was reversed. The same pair of guy derricks that started the job were erected on the existing roof. These handled the last two trusses. Crews set a third guy derrick on the top center of the new steel to help with the last members and to dismantle the pair of traveler derricks.

• **Prestressed trusses**—The designer, PNYA Engineering Department under Chief Engineer John M. Kyle, called for prestressing the trusses to offset live-load and secondary stresses. Bridge strands along the bottom chord applied the prestress.

After a truss was completed and the derricks were shifted forward, stressing crews mounted a jacking device, developed by Harris, at each end of the bottom chord. Two 2½-in. dia steel bridge strands run along the top and bottom of this member, starting at the outer ends and overlapping 90 ft in the center of the chords. Thus, there is a total of eight strands at the center chords. The tendons end at anchorages welded to the chord. Two 300-ton capacity jacks at each truss end, controlled from a single console on the existing roof, stressed the cables simultaneously to 240,000 lb each. Prestressing reduced required steel from 300 to 240 tons in each truss—a 900-ton saving in the entire frame.

The permanent knee brace at one end of each truss will not be connected until the parking decks are completed. For temporary restraint, Harris added an erection strut from existing roof steel up to the top of each rocker-bearing stem at the same side of each truss. In addition, temporary bolts between the top bearings and the truss bottom chords restrain the joints during construction.

There are three expansion joints across the truss structure dividing it into quarters. A typical truss is restrained by the 50-ft-long floor girders framing into top and bottom chords between trusses. At the expansion joints however, the floor girders are supported on sliding bearings leaving the trusses free laterally. Harris bolted these temporarily until steel erection was completed to the next braced bay.

Precast concrete plank will form the three new parking decks. The PNYA is testing finishes, including an epoxy, for the wearing surface. All the new framing on the trusses will be covered with pneumatically applied concrete.

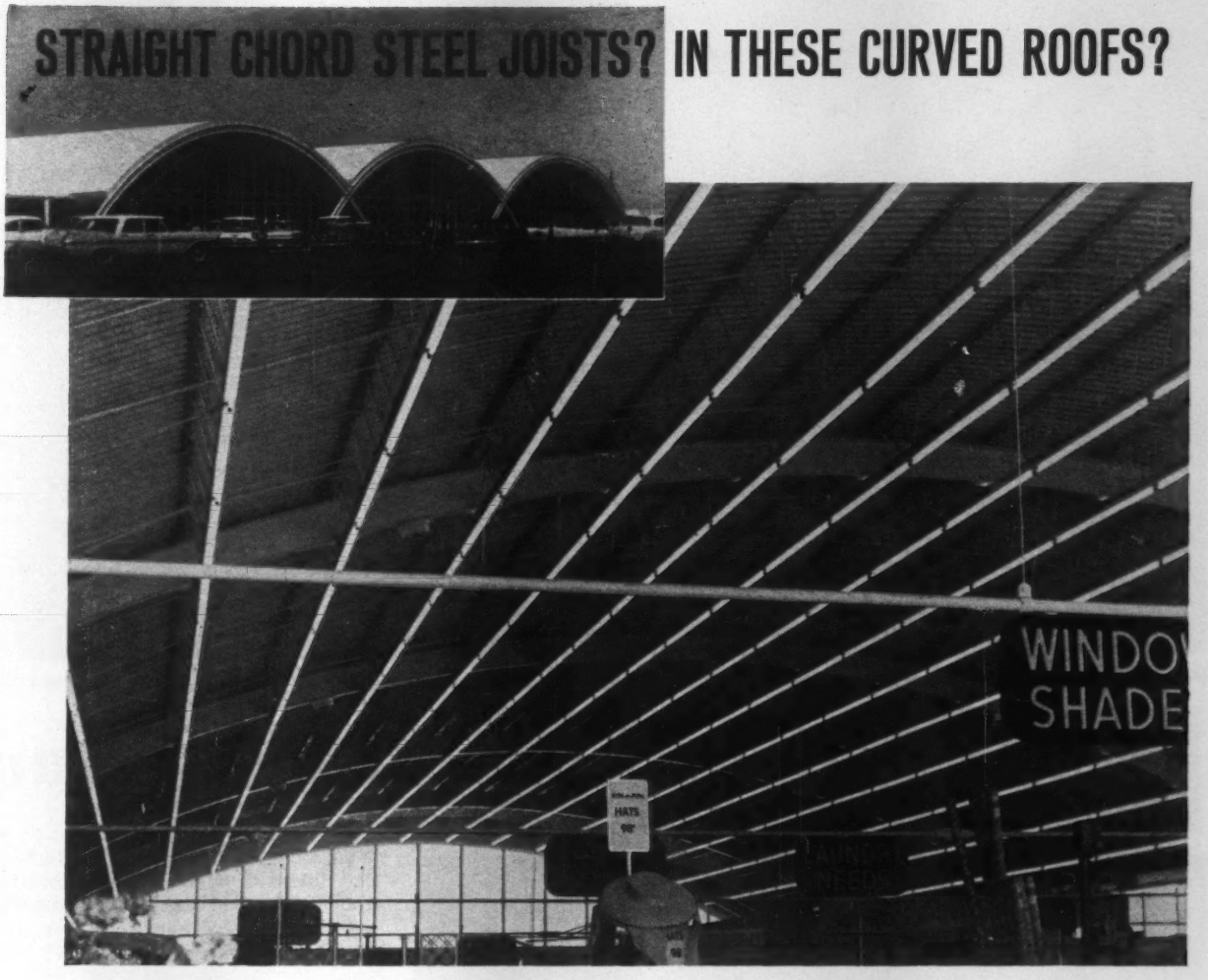
• **New ramps**—Between the bus terminal and the Lincoln Tunnel, three blocks away, workmen are adding a new ramp to the upper decks and modifying existing ramps to carry the additional load of buses and cars.

Because of the new ramp, PNYA designers had to alter the typical panel point spacing in the last three trusses. This special case produced the heaviest member on the job—a top-chord section 95 ft long, weighing 71 tons. Inside the truss structure, ramps connecting the three levels occupy parts of the last two bays.

Improvements are also under way inside the bus terminal to accommodate the expansion. Four new double moving stairs will rise two levels, replacing single stairs, and 21 single-story units will be added throughout the building. Ventilating capacity will be added to clear the existing bus level at the bottom of the terminal. Outside the terminal, a new mercury vapor lighting system will replace existing lights on the ramp network.

Starrett Brothers & Eken, New York City, are the general contractors for the project. F. Harold Horton and Robert S. Smith are erection superintendents for Harris Structural Steel Co.

STRAIGHT CHORD STEEL JOISTS? IN THESE CURVED ROOFS?



They were used here—with economy and efficiency!

One of the biggest advantages of Laclede Open Web Steel Joists is their versatility—their adaptability to practically any architectural style.

Here's an example: the interesting new store recently opened by Central Hardware Company, biggest and best known retail hardware chain in the St. Louis area. It was designed by Schwarz and van Hoefen, and built by Alport Construction Co., both of St. Louis.

Notice how the joists were set longitudinally across the arched I-beams, forming a strong, lightweight, firesafe base for the cylindrical arches. Observe another practical little touch: the fluorescent lighting tubes attached to the bottom chords of the joists for the entire depth of the store.

No matter in which style you design or build, you'll find many time-saving, cost-saving uses for versatile Laclede Open Web Steel Joists.

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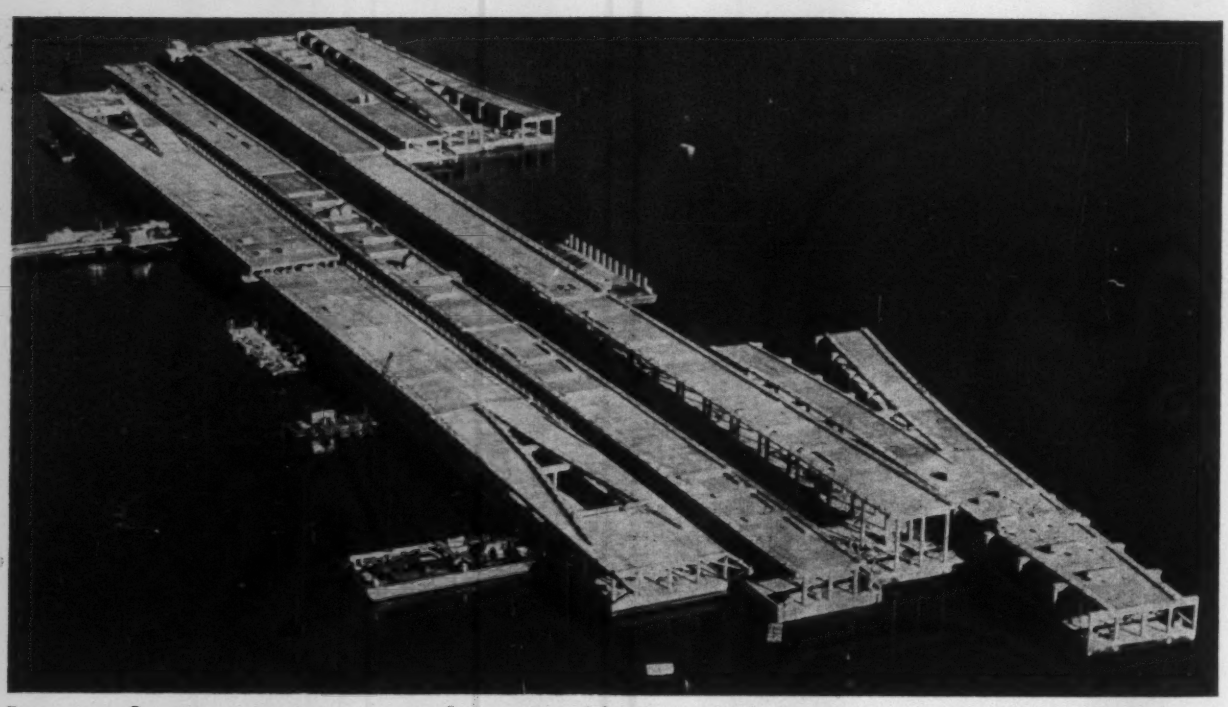


Pontoons floating in quiet waters of Port Gamble Bay are being repaired and strengthened.

The 'Hard Luck' Bridge Nears

Polysulfide epoxy compound bonds pontoons together.

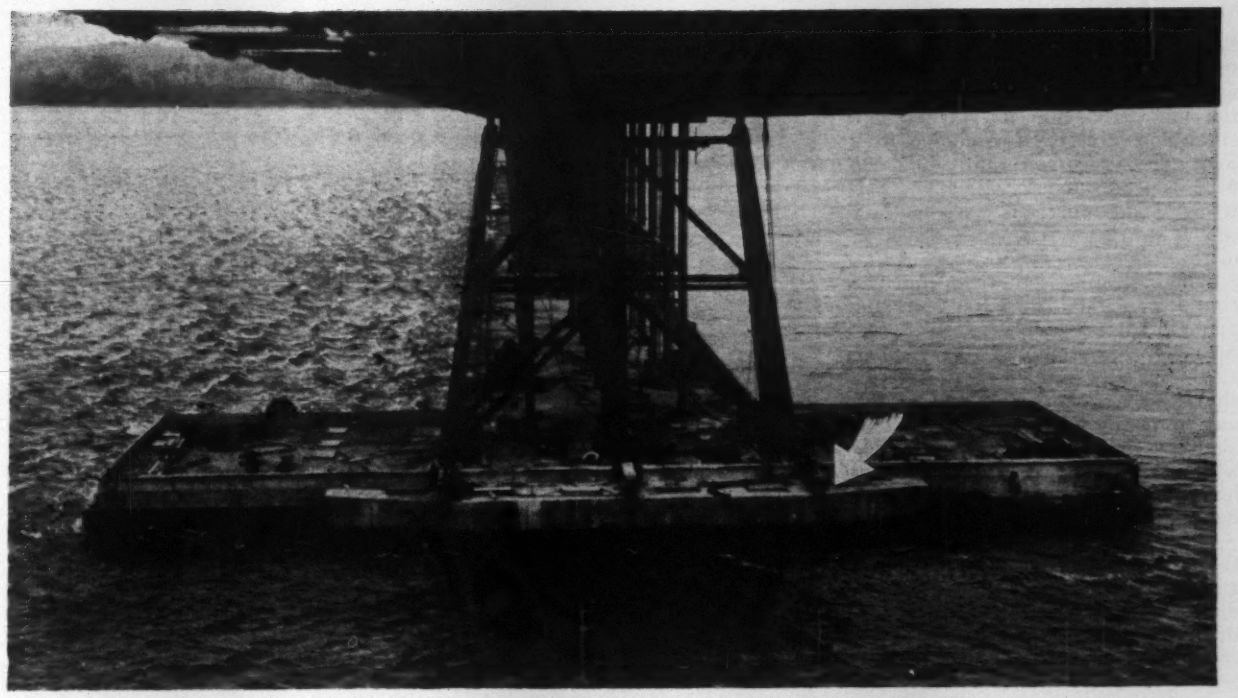
Trail's end is in sight for builders of the ill-starred Hood Canal floating bridge in Seattle, Wash. Assorted accidents and money squabbles have delayed work on the structure, which has been under construction since 1958.

Original plans for the $20-million bridge specified that its 23 concrete pontoons, which will carry an elevated roadway, would be joined with bolts and concrete grout. The pontoons are 360-ft long and 14-ft-deep. Ten of them had been fastened together and anchored in place early last year when a severe storm damaged the joints and cracked top and bottom slabs of seven of them (ENR Feb. 18, 1960, p. 30).

Alarmed by the damage, the Washington Toll Bridge Authority stopped construction and ordered a review of the design. Consulting engineers Howard, Needles, Tammen & Bergendoff of Kansas City modified the original design to strengthen the joints and stiffen the pontoons.

The modifications require the contractor to:

- Bond the pontoons together in groups of two or three with high-strength bolts and an epoxy polysulfide cured with amine. It is one of the largest known structural uses of this material.
- Strengthen the pontoons with some 159,000 ft of post-tensioned prestressing cable.



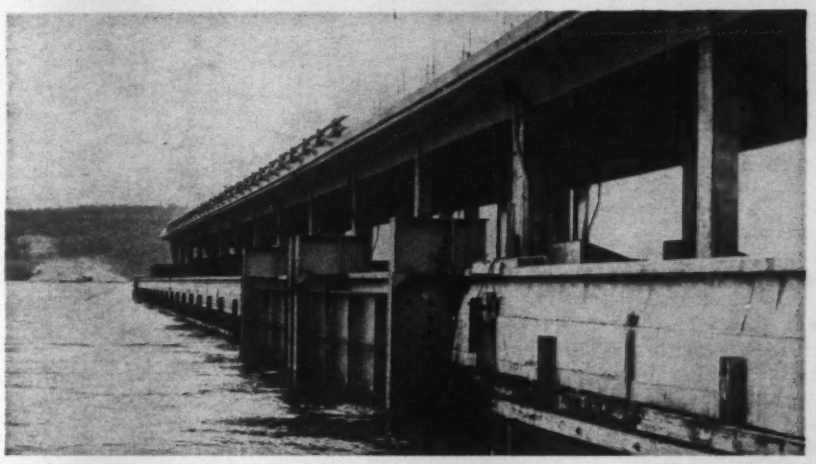
Transition pontoon supports approach span. Auxiliary unit (arrow) anchors prestressing cables.

Completion

• Join the pontoons together and prestress them in their final location. There are five joints to be made in place. Steel strongbacks will strengthen and stiffen the joints during bonding and curing.

Joint venturers Morrison-Kaiser-Puget Sound-General have completed the pontoons under the original $14-million contract. Yuba Erectors Division of Yuba Consolidated Industries, Inc., of San Francisco is doing the modifications under a contract of about $3.5 million.

Working in the quiet waters of Port Gamble Bay, Yuba is joining the pontoons together in groups of two or three.



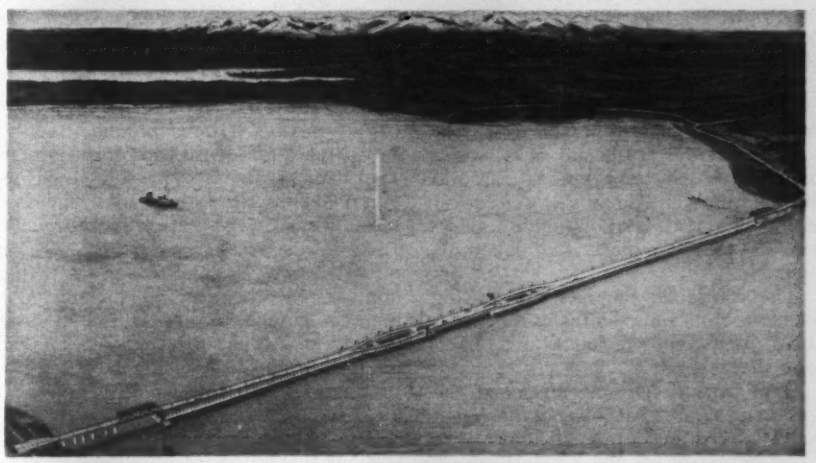
Steel strongbacks hold pontoon units together during bonding.

• **Preparation for bonding**—First major step is to prepare the pontoon ends for joining with the epoxy.

The contractor first must dewater the space between two adjacent ends. For this purpose, engineers designed a 6-ft-wide steel cofferdam with hinged end-walls. It is composed of steel plates welded to steel beams and stringers.

Workmen tie the 70,000-lb cofferdam beneath six 45-in.-dia, 12-ft-long pipe floats. Others bring the ends of two pontoons within 6 ft of one another by lines and winches. They then tow the cofferdam into position.

Next step is to pull the cofferdam up against the bottoms of the pontoon ends. The cofferdam end walls—each supported temporarily by two pipe struts—rise outside the pontoons. Cables



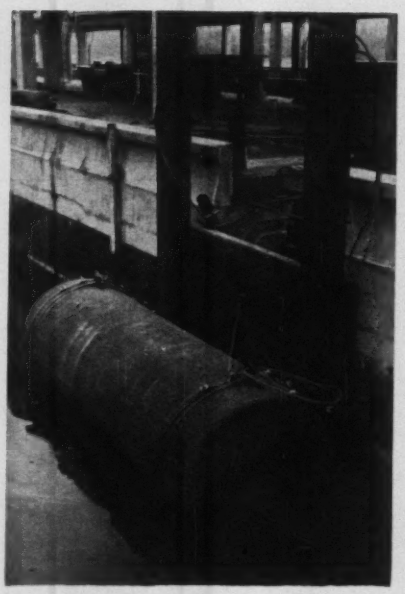
Hood Canal Bridge will have retractable channel pontoons.

that extend across the 50-ft width of the pontoons pull the cofferdam end walls against the pontoons. Four 10-ton track jacks bear on the pontoon decks and steel stubs extending from each side of each end wall to hold the cofferdam floor tightly against the bottoms of the pontoons. A 2-in.-thick rubber strip 6 in. wide seals the edges of the cofferdam.

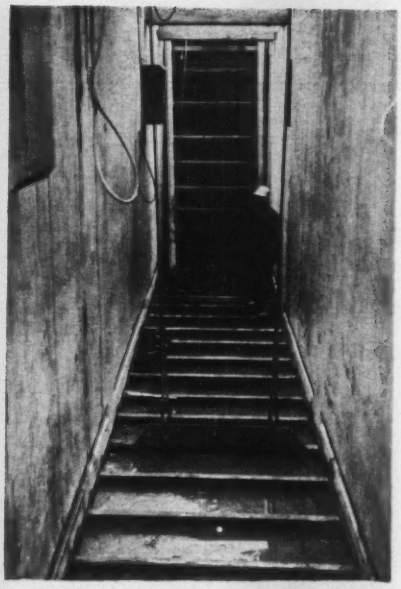
Pumps dewater the cofferdam. The contractor clears barnacles from the pontoon ends, sandblasts and repairs them. Workmen apply epoxy to bond a 2-in.-wide by 3-in.-thick rubber seal along the bottom and up the sides of one pontoon end. Since the concrete is almost as cold as the 45-deg water in which the pontoons float, the area is heated with a flame thrower or space heater to speed curing of the epoxy.

After a crew removes the cofferdam, the pontoons are moved together until a gap of only 1½ in. remains. As this is done, plugs are removed from existing bolt-holes and 80 1½-in-dia high-strength steel bolts are inserted. The bolts, 13½ in. apart, pass through auxiliary beams mounted inside the end walls. The contractor drains an estimated 800 gal of salt water from the gap into the pontoons by removing every other bolt in the bottom row and then pumping out the pontoons. Workmen flush and drain the opening twice with fresh water to remove salt deposits on the end walls.

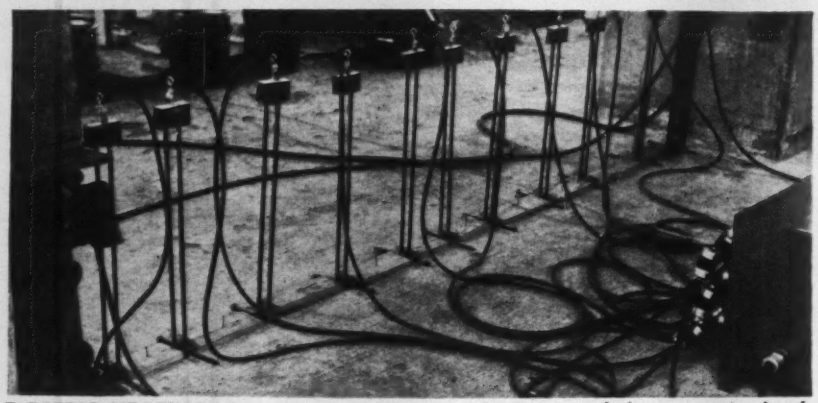
As the pontoons pull together the steel bolts are inserted and tightened just enough to seal off the 1½-in. gap. Later, after the epoxy has cured, tension in the bolts is 70% of ultimate strength.



OUTSIDE, drums help support cofferdam.



INSIDE, men can work on pontoon ends.



ELECTRIC HEATING elements raise temperature of joint space before epoxy is placed.

• **Bonding**—The contractor lowers forty-eight 470-volt heating elements, each 14-ft long, into the opening to heat the pontoon ends for from six to 12 hours to 125 deg F. This hastens the exothermic reaction of the epoxy. Four to six thermocouples wired to a meter provide a temperature check at various points in the gap during the heating period and during placing and curing of the epoxy.

The heating elements rest on spikes extending across the gap; boards between the spikes prevent heat loss.

When temperatures are right, workmen fasten electric "girdles" around 50-gal drums of component A (epoxy) and component B (polysulfide-amine); heat is used to make the chemicals pourable.

The contractor removes the heating elements from the opening and replaces them with five wooden chutes lined with sheet metal.

Heat from a kerosene burner at the lower end of an 18-ft-long rotating steel pipe kiln dries concrete sand (⅛-in. maximum size) for the bonding operation.

The three-hour bonding operation begins with 30-second mixing of equal ¾-gal portions of components A and B in a 5-gal bucket. Mixing is done by a paddle attached to an air motor supported by a wooden rocker. Wood cleats hold the bucket in place. Three gallons of sand are added to the chemicals and mixed for about one minute, after which the stiff mixture is dumped into a chute a few feet away.

Five mixing stations produce about 210 batches of 3.4 gal each for a joint. Two workers man each station; five others supply all stations with chemicals and sand.

• **Prestressing**—Original design of each pontoon incorporated 43 prestressing tendons composed of eight ⅜-in.-dia strands of seven wires each. These tendons lie in the bottom slab—on 2-ft spacings—and the lower portions of the webs.

The modification adds 24 2½-in.-dia tendons that pass through all bulkheads and end walls of each three-pontoon unit. Forty ¼-in. wires with tensile strength of 240,000 psi comprise each cable. The typical tendon is 1,050 ft.

New tendons are divided equally between top and bottom of the pontoons. Upper tendons are 1 ft below the upper deck, lower tendons 1 ft above the bottom slab. Most of the cables are in the two middle cells of the four-cell pontoons, four each in the outside cells.

To accommodate the added cables, the contractor is drilling more than 9,000 4½-in.-dia holes and 886 6-in. holes through bulkheads and end walls ranging in thickness from 6 to 16 in.

The lower set of holes must be plugged to keep the compartments watertight. Workmen put a rubber O-ring around the core and replace it.

Hydraulic jacks tension the tendons to 50% of design value (154,000 lb per tendon) in Port Gamble Bay. Subcontractor Camblin Steel Co. of Rio Grande, Ind., then coats the cables with bituminous material.

(*Story continues on p. 41*)

MAHON

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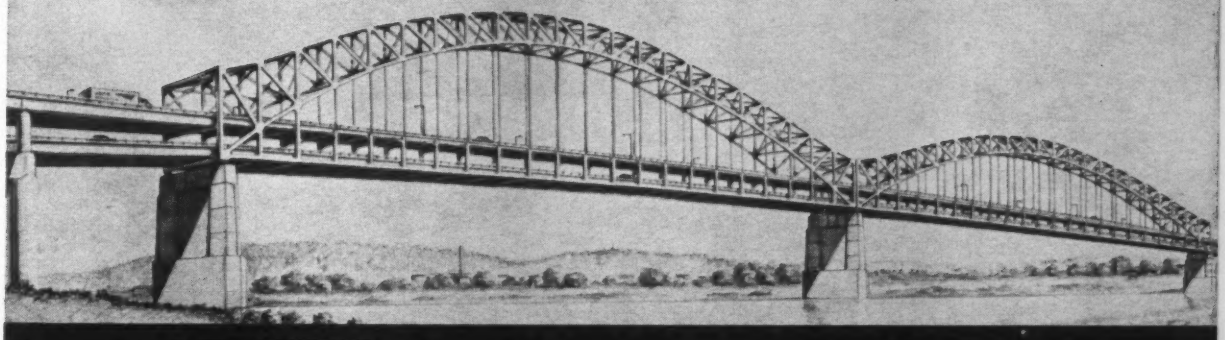
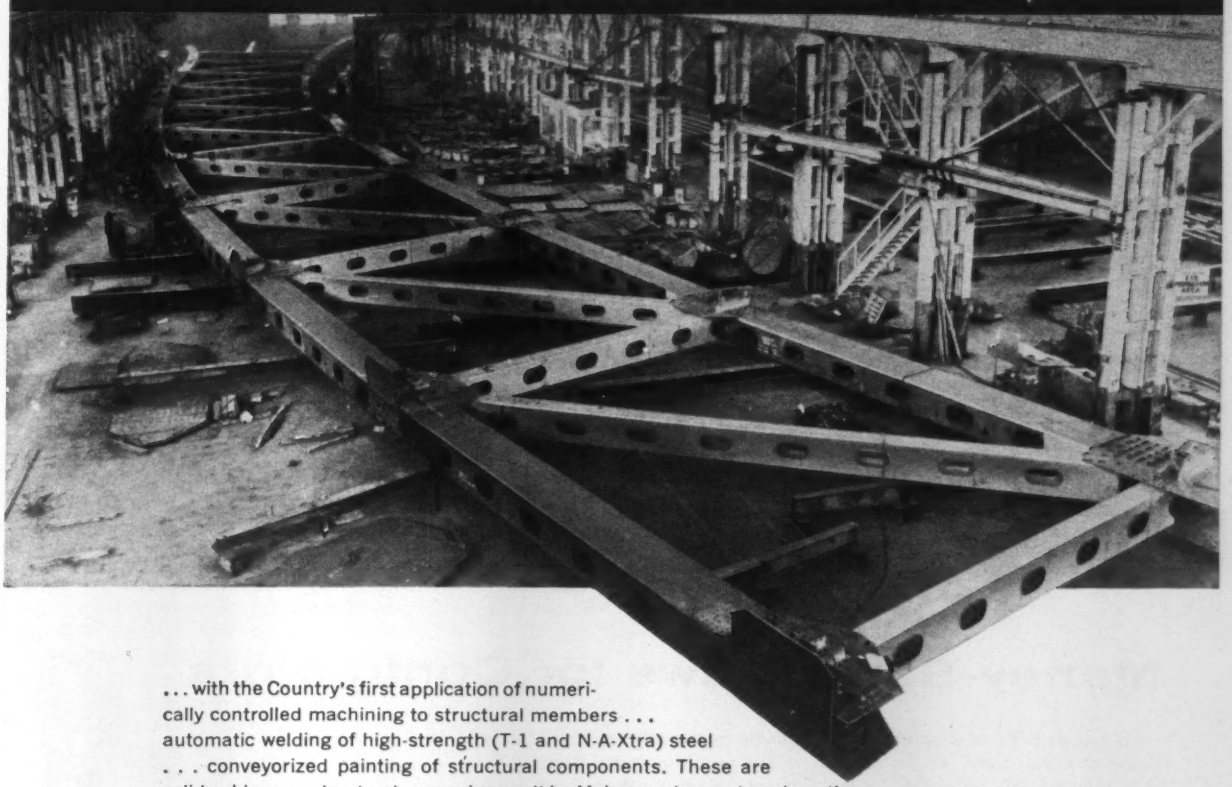
The Nation's first 100,000 psi yield-point bridge—The New Albany Bridge over the Ohio River at Louisville, Ky. The 1600-ft., tandem-tied arch double-deck structure was designed by Hazelet & Erdal, Consulting Engineers. Erection: (Mahon subcontractor) John F. Beasley Co.





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To the professional woodcutter, Homelite Chain Saws are noted for their Money-Makin' features. To the contractor, these same features are Money-Savin' advantages. It's easy to see why. Homelite Saws are rugged — cost less to maintain. They stand up to grueling day-in, day-out operation and ask for more. They're fast-cutting saws — reduce time and cost of clearing land for buildings and roads. And they're lightweight and easy-to-handle to minimize operator fatigue.

The powerful, new Homelite 707D direct drive saw shown above will fell trees up to 5 feet in diameter. Yet it weighs only 19 lbs. less bar and chain. Seven other gear-drive and direct-drive models to choose from . . . matched in power and performance to any woodcutting job. Plus Money-Savin' clearing bars, brush cutters and plunge bows. Write for complete information.

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. . . Finishing Hood Canal Bridge

HYDRAULIC JACK prestresses cable to strengthen pontoons and tie them together.

• **At the bridge site**—Typically, the contractor tows a three-pontoon unit to the site and bonds it to units already in place. Cables 35 ft long will extend between anchorages in the pontoons at each joint between three-pontoon units. The pontoons at either end, however, are not quite typical.

On the east side, an auxiliary pontoon is fastened to the shore side of pontoon U, a transition unit at right angles to the rest of the pontoons. Pontoons T, S and R extend westward from the transition pontoon in the same position they've been in for more than a year. These pontoons, undamaged, were left in place when the other pontoons were towed to Gamble Bay.

The prestressing tendons in these three pontoons extend into the auxiliary pontoon. Initially, the contractor stressed these tendons to 50%, until a single pontoon (Q) was bonded to the west end of pontoon R. After the bonding, tendons about 300 ft long extended from an anchorage in pontoon R to one in Q. These were stressed 100%, after which the tendons in R, S, T and U were brought up to 100%.

The 80x10x30 ft auxiliary pontoon was floated into place and then tilted against the transition pontoon (U); its 30-ft length is upright, its top level with that of the transition pontoon. Workmen titlted the auxiliary pontoon by flooding two of its eight cells with water to create a list. Two three-drum hoists then upended the 550-ton pontoon. Steel cables hold the pontoons together until the prestressing tendons are installed.

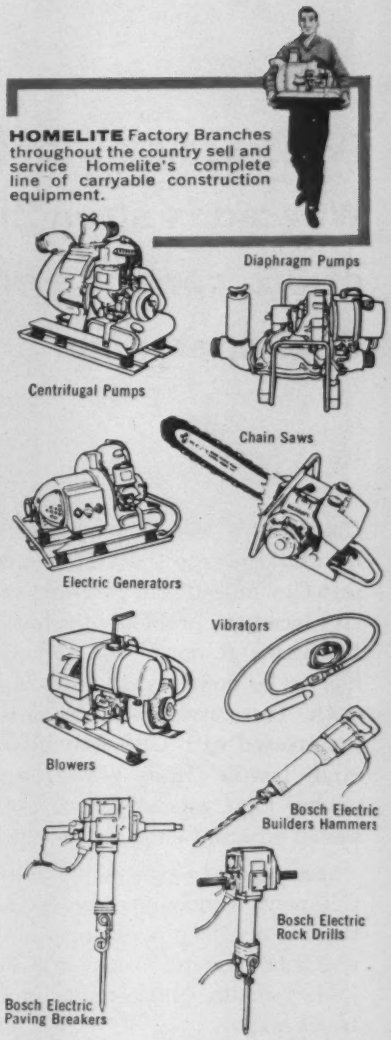
At the west end, an auxiliary pontoon is fastened to the shore side of pontoon A. One other pontoon (B) was in place at that end; a three-pontoon unit (C, D, E) was bonded to it. Workmen connected loose cables in A and B to the anchorage in the end of pontoon C and tensioned them to 100%. They then brought the next three-pontoon unit into position and bonded pontoon F and E; 35-ft tendons between E and F were tensioned 100%. Next step was to increase the tension in the cables connecting C. D and E together to 100%.

The contractor will repeat the same basic procedure until the ship channel is reached. The channel section consists of two 470-ft draw pontoons, which retract into flanking pontoons to allow passage of large ships. The flanking pontoons are cross strutted at the bottom.

• **Anchors**—Lines connected to concrete anchors on the bottom of Hood Canal help to hold the pontoons in place. Nine of the 850-ton anchors were undermined by scour from tidal currents.

Manson Engineering & Contracting Co. of Seattle is placing riprap around the anchors under subcontract. Crews lower sections of 36-in.-diam steel pipes, 60 to 200 ft long, to the bottom during slack tide by a 50-ton derrick. Two steel H-beam spuds on the end of a chute are forced into the bottom by the weight of the pipe, thus permitting accurate placement of the riprap, even during heavy tides.

Frank Bleistein is project engineer for Howard, Needles, Tammen and Bergendoff, which is supervising construction for the Washington Toll Bridge Authority. Edward Ryan is superintendent and Eero Hekkanen, project engineer for the contractors.



HOMELITE FACTORY BRANCHES

EAST: CONNECTICUT: Greenwich, Hartford • NEW JERSEY: North Arlington, Woodbridge • NEW YORK: Albany (Latham), Buffalo, New York (North Arlington, N. J.), Rochester, Syracuse • MAINE: Orono • MARYLAND: Baltimore • MASSACHUSETTS: Boston (Allston) • PENNSYLVANIA: Altoona, Erie, Harrisburg, Hazleton, Philadelphia, Pittsburgh, Malvern • VIRGINIA: Arlington, Richmond, Roanoke • WEST VIRGINIA: Charleston, Clarksburg

SOUTH: GEORGIA: Atlanta • FLORIDA: Jacksonville, Miami • LOUISIANA: New Orleans (Metairie), Shreveport (Bossier City) • NORTH CAROLINA: Charlotte, Raleigh • OKLAHOMA: Oklahoma City • TENNESSEE: Knoxville, Memphis • TEXAS: Dallas, Lufkin

MID-WEST: ILLINOIS: Chicago (Stone Park) • INDIANA: Indianapolis • MICHIGAN: Detroit, Grand Rapids • MINNESOTA: St. Paul • MISSOURI: Kansas City, St. Louis • NEBRASKA: Omaha • OHIO: Cincinnati, Cleveland, Toledo • WISCONSIN: Milwaukee

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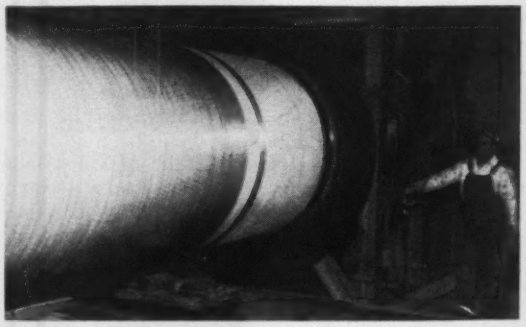
Prestressing with USS American High Tensile Grade Wire adds strength and durability to 11,000 ft. of 36″ concrete pressure pipe installed along Cincinnati main artery

Cincinnati's Montgomery Road is one of the busiest streets in town. It feeds main line traffic into Cincinnati from the Northeast. Recently the city faced the problem of extending a 36″ water line 11,000 ft. down Montgomery Road. The job had to be done fast. The road had to be kept open. The answer was Concrete Pressure Pipe prestressed with USS AMERICAN Bright-Drawn High Tensile Grade Wire. A special steel-and-rubber joint which is made quickly and easily sealed adjacent ends of the pipe.

According to contractor A. F. Jelen & Son Company, Cincinnati, the special joint allowed them to lay the pipe without a hitch, and the job was finished right on schedule. Furthermore, the joint remains bottle-tight under the heaviest traffic loads.

The prestressed steel-and-concrete pressure pipe for the Cincinnati job was manufactured by Price Brothers Company, Dayton, Ohio. It's made by forming a steel plate into a cylinder. The seam is welded and the pipe undergoes a high-pressure hydrostatic test to make certain the weld is tight. The inside of the cylinder is then covered with a layer of centrifugally cast concrete and the cylinder, with its concrete core, is wrapped with a helix of USS AMERICAN Bright-Drawn High Tensile Grade Wire made to ASTM specification A-227. After wrapping, the entire pipe is covered with mortar to protect the wire from corrosion. Tension in the wire places the concrete and steel cylindrical shell in compression. In service, the internal pressure caused by the liquid acts to overcome this pressure. Thousands of miles of this and other types of prestressed concrete pipe have been installed across the country.

USS American Steel and Wire Division pioneered the making of high tensile strength steels for prestressed concrete construction. And we are constantly working with manufacturers to make sure they get the wire they need to keep the quality of their product high. Get the complete story in our free 56-page brochure: *USS American Wire and Strand for Prestressed Concrete.* Write today: American Steel and Wire, 614 Superior Ave., N.W., Cleveland 13, Ohio. USS and American are registered trademarks



Steel cylinder, with concrete core, wrapped with USS AMERICAN High Strength Wire. Wire is then covered with mortar coating.

American Steel and Wire Division of United States Steel

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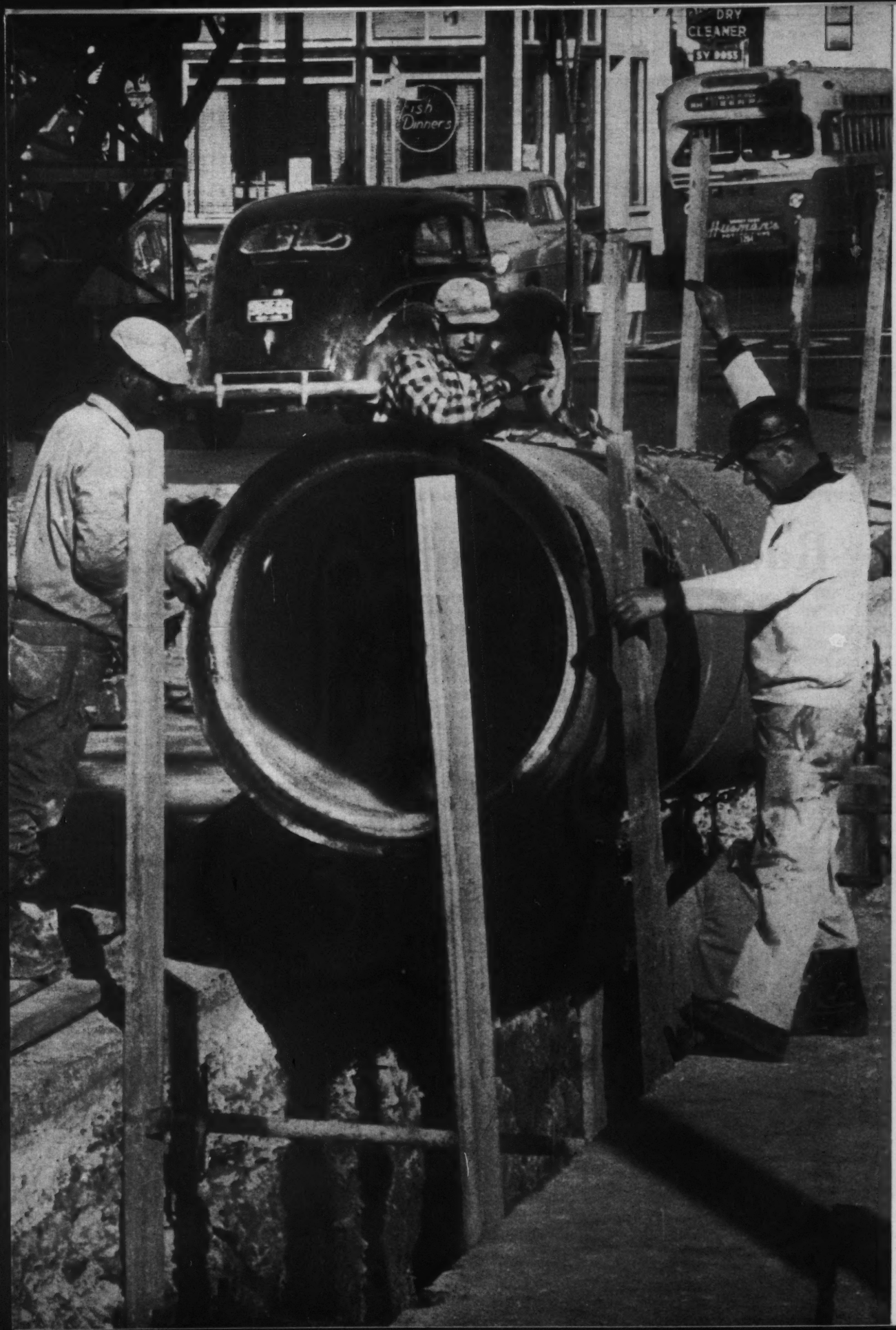
Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, New York, Distributors Abroad


DRY
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Dinners

Aided by a folded-plate concrete roof over wood-fiber-concrete planks . . .

Radio-TV Station Shuts Out Big

Station WFAA stands deep in the heart of Dallas, Tex., right next to a busy railroad line and surrounded by heavy downtown traffic.

But the 68,331-sq-ft new building, which houses both radio and TV studios, has noise and vibrations completely controlled, so thoroughly that in one studio the reverberation periods can be precisely adjusted.

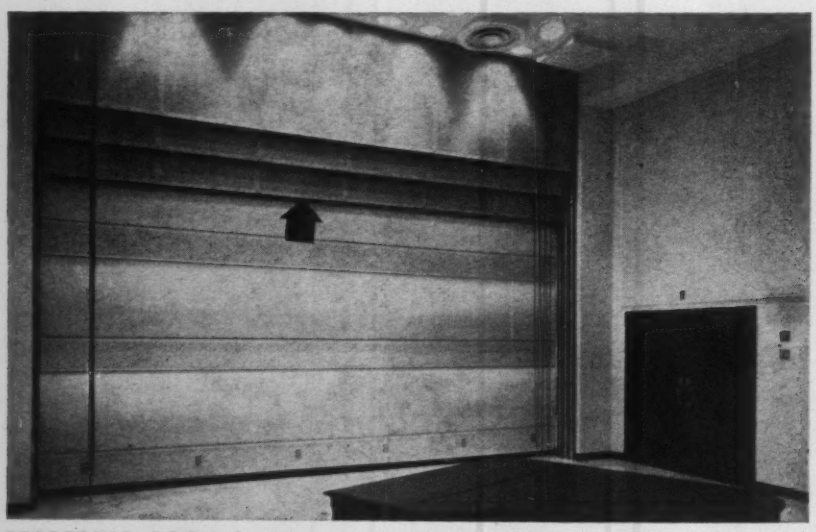
The folded-plate roof of the main building covers three TV and three radio studios, plus a recording room. Associated control, supply and maintenance rooms are also in the main building, close to the studios. A flat-roofed, one-story building, adjacent to the communications center, houses business offices.

TV and recording studios are only one story, with walls rising to the folded-plate ceiling; this layout provides a resonant cavity about 25 ft high, without suspended acoustical ceilings.

• **Ceilings and roof**—The ceiling and roof over all the operating sections are made of acoustical plank and 4½-in.-thick concrete slabs. With folded-plate concrete placed directly on 3-in.-thick wood-fiber-concrete plank, the main ceiling offers an average noise-reduction coefficient of at least 0.75, while the folded-plate roof reduces the amount of steel and concrete needed.

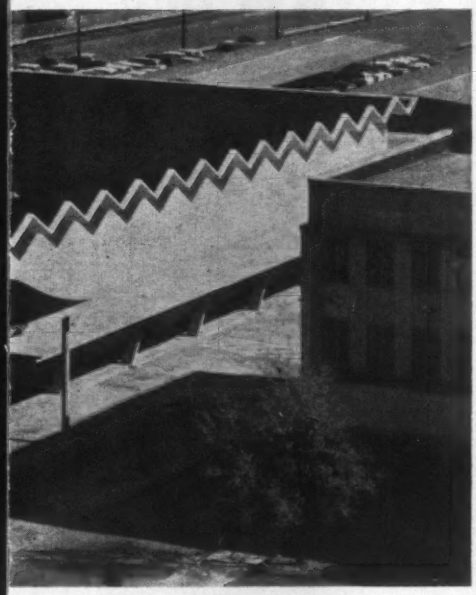
Suspended ceilings in the three radio broadcasting studios are made of random-perforated 12 x 12-in. metal pans. Backed with mineral-wool pads, these 16-gage galvanized pans hang from wire grids. Resulting noise reduction coefficient ranges from 0.70 to 0.90.

In the TV studios there is no suspended ceiling because the folded-plate ceiling provides enough noise attenua-



RECORDING ROOM has convex cylinders on walls and ceiling to diffuse noise evenly; the three counterbalanced panels (arrow) are adjusted to vary noise reverberation periods.

CEILING in recording room is of perforated steel deck, walls are plaster covered.



City Noise

tion. In the recording studio, however, the designers had to meet the severest criteria for acoustical control.

• **Controlled isolation**—The recording room is completely isolated from vibrations of passing trucks and trains by a 6-in.-thick secondary floor above the rough floor. Main supports of the secondary floor, a 2½-in. concrete slab, are resilient sleepers set in 1½-in. cement grout on the rough floor. A layer of hair felt separates the sleepers from a layer of fence post sections, 16 in. c-c, that support ½-in.-thick gypsum board. And this board, in turn, underlays the secondary floor, which is topped with rubber sheets.

To insure an even distribution of sound within the recording studio, convex contours line the walls and ceiling. On the walls, this polycylindrical diffusion system is made up of plaster spread on cylindrical metal lath, with perforated metal panels between cylinders. The cylinders run vertically along two long walls and horizontally along a splayed end wall.

On the opposite end wall the convex cylinders are covered with three counter-balanced panel grids that can be raised or lowered for adjustment of reverberation periods. The 22 x 6-ft panels are framed with aluminum and faced with ⅛-in.-thick, perforated, aluminum-alloy sheets. Panels are filled with 2-in.-thick glass-fiber blankets.

Seventeen feet above the floor of the recording studio another polycylindrical system covers the ceiling. Several long spans of cellular steel panels are arched together to form cylindrical sections. These panels are acoustically treated with perforations and glass-fiber insulation. Resulting noise reduction coefficient is 0.80.

• **Walls and doors**—Cavity walls line both TV and radio rooms. But just as the TV studios did not require a suspended acoustical ceiling, so their walls are not so thick as the radio studios.

In the TV studio, an 8-in. brick backup wall is tied to 3-in. slabs of wood-fiber-concrete plank laid in mortar; air space between these layers is 2-¾ in. In the radio studios, the brick-air-brick wall measures 10 in. thick and has a plaster-on-metal-lath facing.

To prevent sounds from building up within the studios, no two walls are parallel—except for the polycylindrical walls of the recording room. And where a wall is too long to be splayed on one angle, it is segmented and angled in short splays. All walls of the radio and TV studios are set on felt isolators.

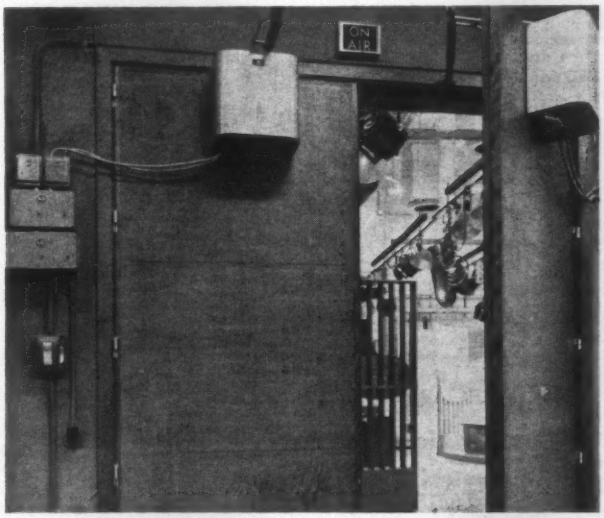
Acoustical doors, priced at about $3,500 for each 700-lb panel, complete the soundproofing enclosure around the studios. Both 4-in.-thick and 2⅝-in.-thick doors, of laminated wood over a laminated wood core, house shaped steel plates packed in vibration-isolation material.

• **Mechanical systems**—Heating and air-conditioning units were a major threat to the noise control already built in, because fans and ducts could be natural sources of noise. So, low-speed fans circulate air. These low-pressure units are installed far from the studios on spring isolators.

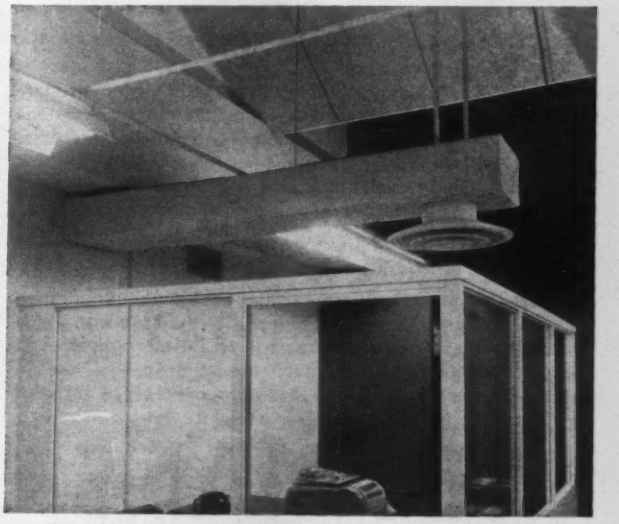
Long-run supply ducts in the TV studio have conical diffusers, which spill out air masses at slow speeds. Because the outlet collars have no dampers or air deflectors, some efficiency had to be sacrificed to achieve a low level of noise. All ducts serving the radio and recording studios are suspended on spring isolation hangers.

The central heating and cooling system consists of two 220-ton hermetic coolers and one 2,100,000 Btu per hr low-pressure hot water boiler.

Owner is A. H. Belo Corp., publishers of the Dallas Morning News and owners of WFAA radio and TV stations. George L. Dahl, architects and engineers, designed the building. Consultants were Jim Cooper, chief engineer for WFAA, and C. P. Boner, on acoustics. Lee-Emmert was the general contractor. All are from Dallas, except Boner, who is from Austin.



TV STAGE is set and soundproof doors are closing by remote control; electric lock keeps intruders out during broadcasting hours.



INSIDE CEILING of wood-fiber-concrete plank is an integral part of the folded-plate roof; suspended air duct is glass-fiber lined.

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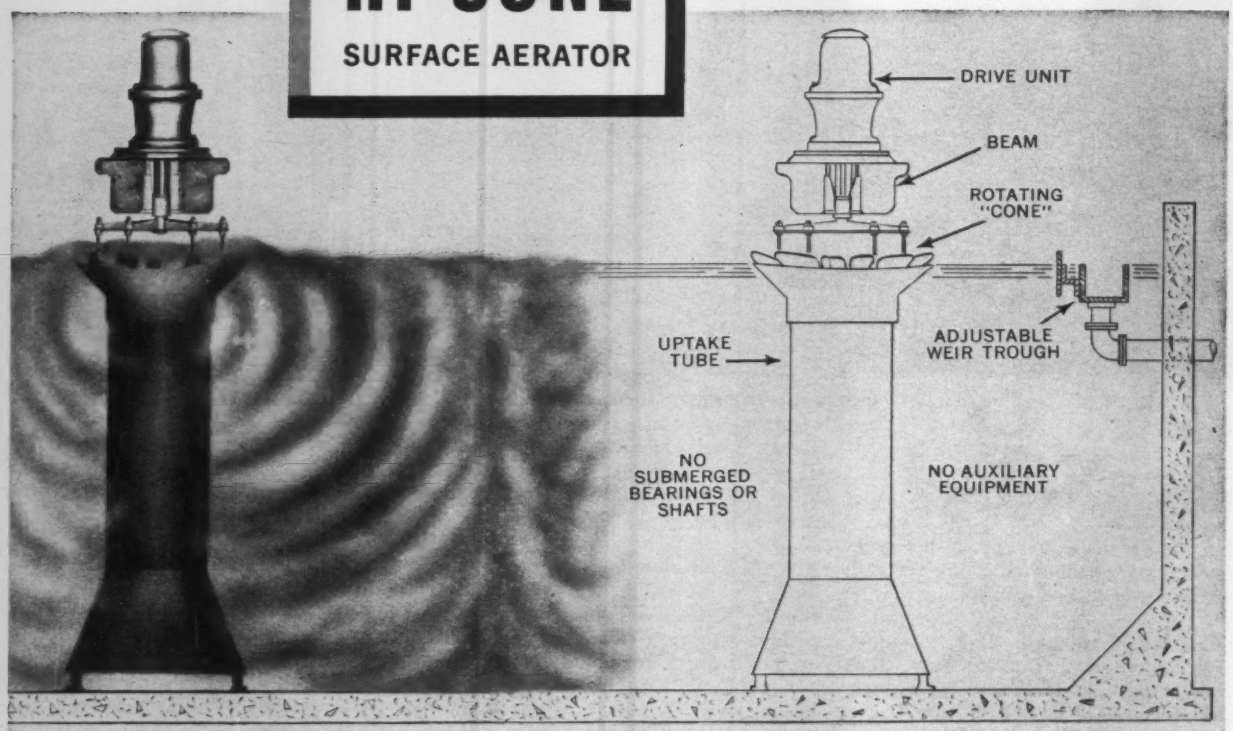
SURFACE AERATOR



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As a result of recent investigations, it is becoming increasingly apparent that oxygen absorption is almost entirely dependent on the rapid and continuous creation of liquid-to-air interfaces. This fact has been long known but not forcibly demonstrated until recently. All oxygen absorption occurs at the liquid "surfaces"—regardless of equipment design or method of aeration.

Therefore, the gauge of efficiency, whatever type of equipment you consider, is "lbs. of oxygen absorbed per KWH."

Compare Hi-Cone's "efficiency rating" with any other aeration equipment. At the same time, investigate the ease with which Hi-Cone handles variations in waste flows and strength through easily adjustable weirs and variable operating speeds. You can get this information by asking your Yeomans representative or the factory for the studies offered at right.

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Inches of Cone Exposure	R.P.M.	Lbs. O_2 Absorbed per Hour at 20° C	NET KW	NET KWH per Lb. Oxygen Absorbed
½	34	37.2	7.0	.188
½	42	57.5	9.9	.172
2	38	38.7	7.3	.189
2	46	54.0	10.0	.185
4	34	27.7	4.9	.177
4	50	54.0	9.5	.176

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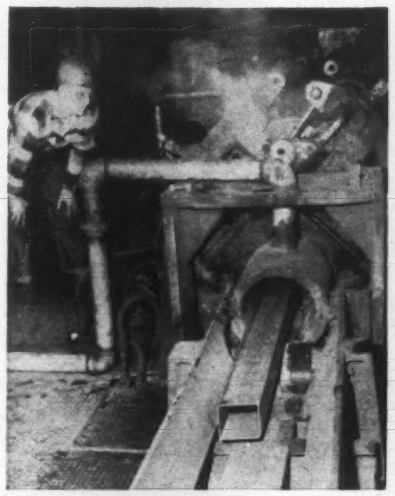
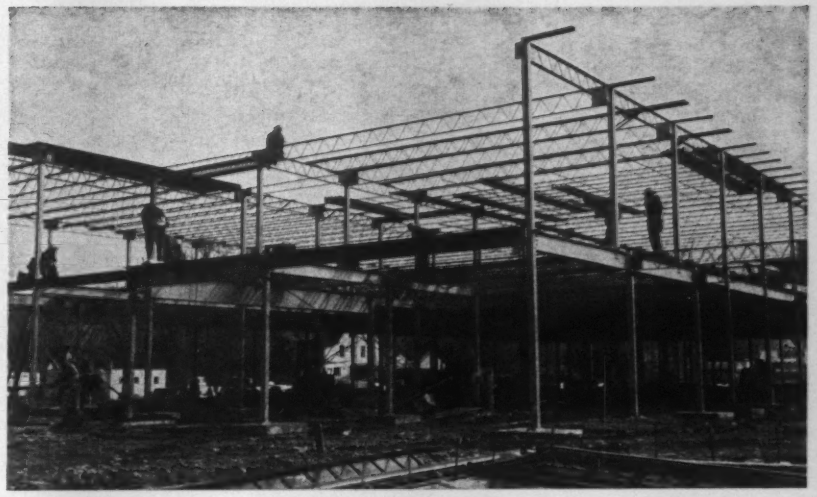




New tubular sections . . . cut column costs for a 55-classroom school in Elmira, N. Y.

U.S. Steel Rolls Square Tubular Shapes

Section Properties of USS Tubular Shapes

Square Structural Tubing

Size, inches	Wall inches	Weight per foot pounds W	Area of metal square inches A	Moment of inertia I	Section modulus S	Radius of gyration r
1 x 1	.095	1.09	.3206	.0420	.0839	.3618
	.133	1.41	.4152	.0484	.0968	.3415
2 x 2	.110	2.69	.7914	.4574	.4574	.7603
	.125	3.04	.8934	.5079	.5079	.7540
	.154	3.65	1.0750	.5911	.5911	.7415
	.1875	4.31	1.2688	.6667	.6667	.7249
2½ x 2½	.141	4.32	1.2720	1.1498	.9198	.9507
	.1875	5.59	1.6438	1.4211	1.1369	.9298
	.250	7.10	2.0890	1.6849	1.3479	.8981
3 x 3	.155	5.78	1.7015	2.2509	1.5006	1.1502
	.1875	6.86	2.0188	2.5977	1.7318	1.1344
	.250	8.80	2.5890	3.1509	2.1006	1.1032
3½ x 3½	.156	6.88	2.0240	3.7112	2.1207	1.3541
	.1875	8.14	2.3938	4.2904	2.4517	1.3388
	.250	10.50	3.0890	5.2844	3.0196	1.3079
	.3125	12.69	3.7329	6.0826	3.4758	1.2765
4 x 4	.1875	9.31	2.7383	6.4677	3.2338	1.5369
	.250	12.02	3.5354	7.9880	3.9940	1.5031
	.3125	14.52	4.2720	9.2031	4.6016	1.4677
	.375	16.84	4.9543	10.152	5.0760	1.4315
5 x 5	.1875	11.86	3.4883	13.208	5.2831	1.9458
	.250	15.42	4.5354	16.595	6.6380	1.9128
	.375	21.94	6.4543	21.946	8.7784	1.8440
	.500	27.68	8.1416	25.521	10.208	1.7705
6 x 6	.1875	14.41	4.2383	23.496	7.8322	2.3545
	.250	18.82	5.5354	29.845	9.9482	2.3220
	.375	27.04	7.9543	40.436	13.479	2.2547
	.500	34.48	10.142	48.379	16.126	2.1841
7 x 7	.1875	16.85	4.9577	37.698	10.771	2.7575
	.250	22.04	6.4817	48.052	13.729	2.7228
	.375	31.73	9.3339	65.544	18.727	2.6499
	.500	40.55	11.927	78.913	22.547	2.5722
8 x 8	.250	25.44	7.4817	73.382	18.346	3.1318
	.375	36.83	10.834	101.46	25.366	3.0603
	.500	47.35	13.927	124.08	31.021	2.9849
10 x 10	.250	32.23	9.4817	147.89	29.578	3.9494
	.375	47.03	13.834	208.21	41.642	3.8795
	.500	60.95	17.927	259.81	51.962	3.8069

Rectangular Structural Tubing

Size, inches		Wall inches	Weight per foot pounds	Area of metal square inches	Axis X-X			Axis Y-Y		
Axis Y-Y	Axis X-X				Moment of inertia	Section modulus	Radius of gyration	Moment of inertia	Section modulus	Radius of gyration
			W	A	I	S	r	I	S	r
3	2	.141	4.32	1.2720	1.4972	.9981	1.0849	.7951	.7951	.7906
		.1875	5.59	1.6438	1.8551	1.2367	1.0623	.9758	.9758	.7704
		.250	7.10	2.0890	2.2030	1.4687	1.0269	1.1466	1.1466	.7409
4	2	.155	5.78	1.7015	3.3477	1.6738	1.4027	1.1230	1.1230	.8124
		.1875	6.86	2.0188	3.8654	1.9327	1.3837	1.2849	1.2849	.7978
		.250	8.80	2.5890	4.6893	2.3447	1.3458	1.5321	1.5321	.7692
4	3	.156	6.88	2.0240	4.5198	2.2599	1.4944	2.8949	1.9299	1.1959
		.1875	8.14	2.3938	5.2291	2.6146	1.4780	3.3404	2.2269	1.1813
		.250	10.50	3.0890	6.4498	3.2249	1.4450	4.0988	2.7326	1.1519
		.3125	12.69	3.7329	7.4338	3.7169	1.4112	4.7000	3.1333	1.1221
5	3	.1875	9.31	2.7383	8.8629	3.5452	1.7991	4.0118	2.6746	1.2104
		.250	12.02	3.5354	10.949	4.3797	1.7598	4.9195	3.2797	1.1796
		.375	16.84	4.9543	13.907	5.5628	1.6754	6.1552	4.1034	1.1146
6	4	.1875	11.86	3.4883	17.160	5.7198	2.2179	9.1952	4.5976	1.6236
		.250	15.42	4.5354	21.574	7.1913	2.1810	11.509	5.7544	1.5930
		.375	21.94	6.4543	28.553	9.5178	2.1033	15.097	7.5486	1.5294
7	5	.1875	14.41	4.2383	29.380	8.3943	2.6329	17.552	7.0210	2.0350
		.250	18.82	5.5354	37.341	10.669	2.5973	22.241	8.8963	2.0045
		.375	27.04	7.9543	50.646	14.470	2.5233	29.985	11.994	1.9416
		.500	34.48	10.142	60.642	17.326	2.4453	35.688	14.275	1.8759
8	4	.1875	14.41	4.2383	34.828	8.7070	2.8666	11.923	5.9614	1.6772
		.250	18.82	5.5354	44.230	11.058	2.8267	15.030	7.5148	1.6478
		.375	27.04	7.9543	59.864	14.966	2.7433	20.042	10.021	1.5874
		.500	34.48	10.142	71.475	17.869	2.6548	23.567	11.784	1.5244
8	6	.1875	16.85	4.9577	45.772	11.443	3.0385	29.548	9.8493	2.4413
		.250	22.04	6.4817	58.362	14.590	3.0007	37.608	12.536	2.4088
		.375	31.73	9.3339	79.643	19.911	2.9211	51.143	17.048	2.3408
		.500	40.55	11.927	95.916	23.979	2.8358	61.374	20.458	2.2684
10	6	.250	25.44	7.4817	100.35	20.070	3.6623	45.879	15.293	2.4763
		.375	36.83	10.834	138.69	27.739	3.5780	63.026	21.009	2.4119
		.500	47.35	13.927	169.48	33.896	3.4884	76.541	25.514	2.3443

Square and rectangular tubular steel shapes are now available in a wide size range from United States Steel's National Tube Division.

Hot-rolled in conventional pipe mills, the tubes come in two grades of steel: ASTM A7 (yield point 33,000 psi) and ASTM A36 (yield point 36,000 psi). Square tubing is available in 1x1- in. through 8x8-in. sections; rectangular tubing is available in 3x2 through 6x4-in. sections.

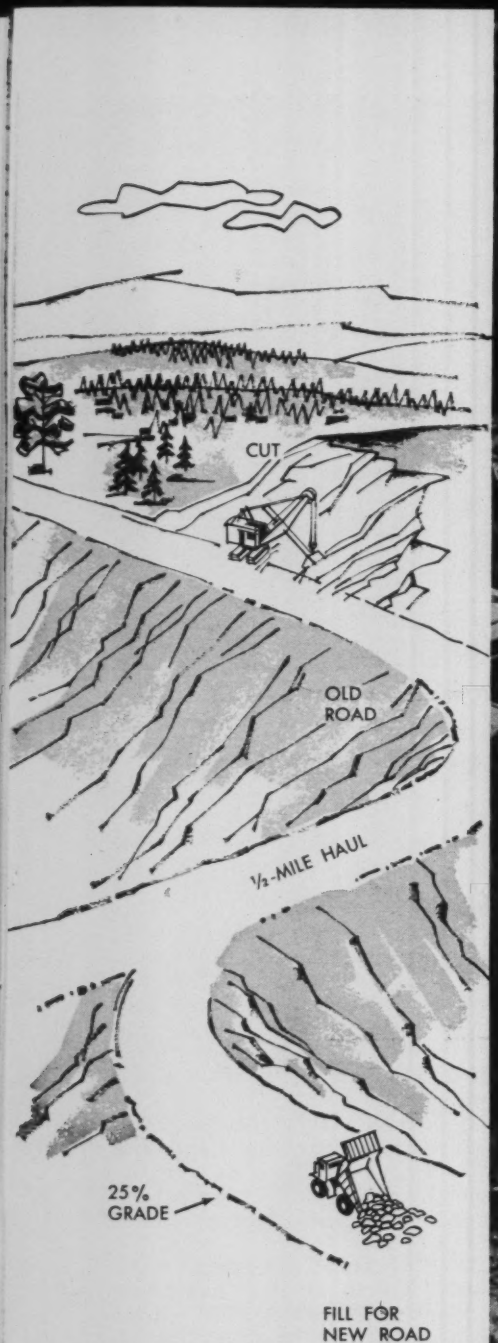
U. S. Steel will roll and stock larger sizes as demand developes. Larger sizes will include a 10x10-in. Section, and four rectangular sizes featuring a 10x6-in. maximum section. All sizes come in several weights.

Chief structural advantages of the tubular sections are their compressive and torsional resistance. The lightest 10-in.-square tube, to weigh 32.23 lb per ft, has a radius of gyration more than twice the weak axis r value of a 10WF33.

Architecturally, the straight-sided tubular columns offer several advantages over pipes and wide flanges: they fit into masonry readily and they are less likely to require interior furring.

A 55-classroom school now under construction in Elmira, N. Y., will contain 162 tons of 5-in. square tubular columns.

Architects-engineers on the Elmira school are Considine & Haskell of Elmira. General contractor is Streeter Associates, Inc., also of Elmira. The American Bridge Division of United States Steel fabricated and erected the structural steel.



Sketch shows job conditions at the time of this report. Part of ½-mile haul was over old highway down around winding "switchback", rest was down steep 25% grade. Altitude where shovel and Haulpaks are working: 6,000 ft.

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

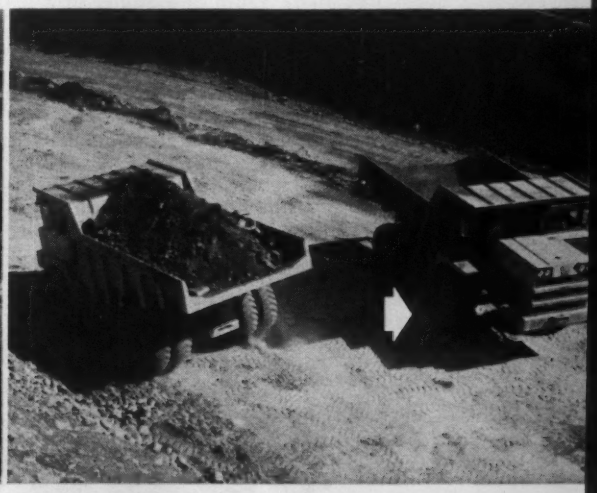
Panoramic view shows fill area on MacGregor Triangle's job. Twin, 3-stage hoists raise Haulpak body to high dump angle in seconds. Straight, smooth body floor speeds ejection. No "kick-up" at back means unit stays steady when dumping. Exhaust-heated body prevents materials from sticking.

LW HAULPAK® REPORT

relocating 6.8 miles of U.S. Highway 14

"An extremely tough schedule," is the way Superintendent Jack Richmond, MacGregor Triangle Company, Boise, Idaho, sums up the firm's work relocating a rugged section of U.S. 14 southeast of Dayton, Wyoming. The schedule: move 660,000 yds — 75% of it rock — in 19 weeks! MacGregor assigned three of their six LeTourneau-Westinghouse 27-ton Haulpak trucks to haul the big quantities of shovel-rock. How have they been performing? *"From a mechanical and operating standpoint, Haulpaks are the most perfectly designed piece of equipment that I've seen,"* reports Jack Richmond. Production for each 335-hp LW truck averages 18 pay yards of dirt and rock every 10 minutes on one-mile cycles.

"Smooth riding," says Haulpak operator David N. Steele, "even better than most cars." Chief reason: LW Hydrair®. This air-hydraulic suspension system cushions load and road shocks, keeps load riding level, gives longer tire life. Just one of many exclusive production-boosting features you get with the five sizes of end-dump LW Haulpaks, 22 to 65 tons.



Look at the sharp 45° turn angle of front wheels. Haulpak turns in ⅓ *less* space than comparable haulers . . . spots faster at shovel and dump, completes more cycles per shift. LW Haulpak gives you this short turn because Hydrair suspension eliminates springs and axle obstructions at front wheels. Maintenance costs are greatly reduced, too.

HP-2436-DCJ-2

Addition to Diamond's Department Store, Park Central Shopping Center, Phoenix, Arizona. Associated General Contractors: Bell Vista Properties and E. F. Hargett & Co. Planners: John Graham, Architects and Engineers. Supervising Architect: John Schotanus

A Form For Any Type Round Concrete Column

With FIVE basic types to choose from, SONOCO SONOTUBE Fibre Forms offer contractors a form to meet virtually every job requirement—economically—wherever round concrete columns are specified.

This choice is important, because it allows you to pick the one SONOTUBE Fibre Form *best suited* to a particular job. *Only Sonoco* offers a form specifically designed for each of these column types:

1. For ordinary exposed columns, use Sonoco "A" Coated SONOTUBE Fibre Forms.
2. For extra-smooth finished columns, use Seamless SONOTUBE Fibre Forms.
3. For unfinished or unexposed columns, use "W" Coated SONOTUBE Fibre Forms.
4. For encasing existing posts, piles, utility lines, etc., with concrete, use SONOTUBE Encasement Forms.
5. For columns to be formed in water or excessive dampness, use Special SONOTUBE Fibre Forms.

And remember, lightweight SONOTUBE Fibre Forms place, brace, pour, and strip quicker—providing you with the fastest, most economical method of forming round concrete columns. Order in sizes 2" to 48" I.D., standard 18' lengths or as required. Can be sawed.

See our catalog in Sweet's

For complete information and prices, write

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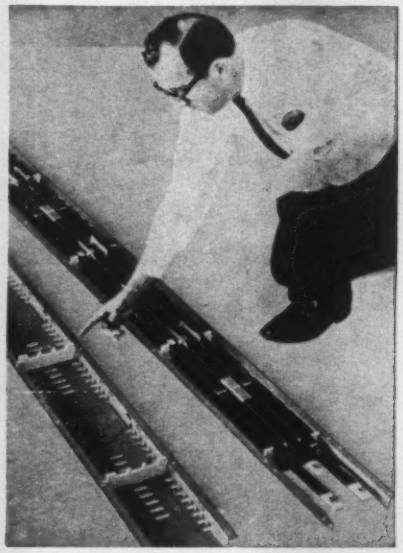
New Products



Glass Fiber Insulators Reduce Busway Weight

Glass fiber insulators, dubbed Polyair Insulation, are now standard supports for the new line of Uni-Bus feeder and plug-in busways.

Available in busways rated between 60 and 4,000 amp, the new polyester supports are said to be 25 times stronger than ceramic insulators. The manufacturer also claims that this new line will be 30% lighter than conventional sections. For example, the older 600-amp, 10-ft section weighed 80 lb; the same busway with Polyair construction weighs 55 lb.

Ground clearance from bus bars is $\frac{7}{8}$ in. And all bus-bar conductors are double wrapped in varnished cambric tape and flame-resistant polyvinyl chloride tape. ELECTRIC DISTRIBUTION PRODUCTS, INC., 2200 31ST S.W., ALLENTOWN, PA.

Floor-Operated Grinder Finishes Concrete Ceilings

Here's a grinder that will smooth ceilings up to 18 ft high and telescope down for ceilings as low as 9 ft 2 in.

A turntable tilts the grinding disk for removing fins or nails. For both rough work and finishing, shocks are absorbed by a bearing in the housing that supports the 9-in. abrasive disk. Grinding pressure is applied by taking up links on the spring-and-chain connected to lever attached to the grinder.

A 1-hp motor drives the grinder at 3,450 rpm. STOW MFG. CO., 443 STATE ST., BINGHAMTON, N. Y.

Single or Two-Stage Use For Air Compressor Line

LeRoi is now making a line of compressors that can be used as either single or two-stage machines.

The machines, which are manufactured in ranges of from 260 to 1,080 cfm, will produce 50 psi of air on single stage operation and 125 psi of air on dual stage.

The compressors are made in three and six-cylinder models with the three-cylinder machine having a displacement of from 260 to 580 cfm and the six-cylinder machine having displacements of 548 to 1,080 cfm.

Horsepower for the three-cylinder machine ranges from 45 to 85 and in the six-cylinder machine from 105 to 175. LeRoi Division, Westinghouse Air Brake Company, Sidney, Ohio.

Zinc-Coated Steel Grips Paint, Speeds Welding

A spangle-free, hot-dipped zinc-coated steel, "Zincgrip A, Paintgrip," offers better painting and welding characteristics than other zinc-coated steel, the manufacturer claims.

The number of resistance spot welds that can be made before tips need redressing is said to more than double the number possible on regular galvanized sheets. And because Zincgrip A, Paintgrip is produced with a consistently ductile coating, the manufacturer states, it can be drawn, formed and lock-seamed to the limit of the base metal without flaking or peeling the coating.

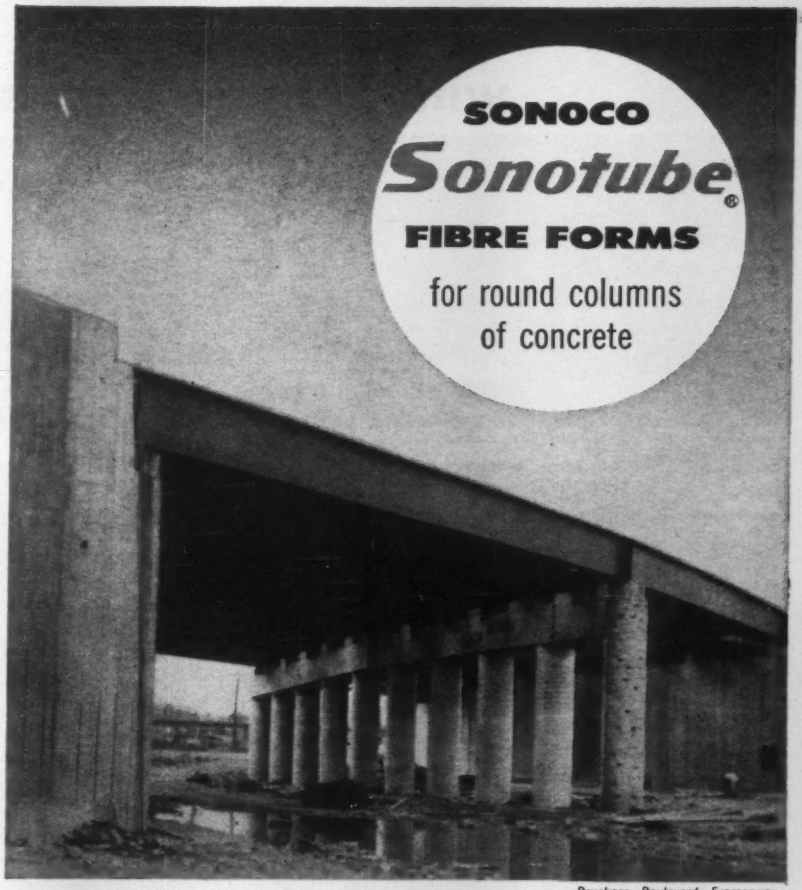
This 1.25-oz, ASTM A93 coating is hot-dip applied to sheets and coils (up to 72 in. wide) in gages 16 through 24, widths 36 to 48 in. Armco Steel Corp., Middletown, Ohio.

Coating Plus Fiber Equals New Covering for Old Roof

Monoglas is a glass fiber fabric used with a silicone liquid coating called Rufferseal to form a seamless, watertight roof. This surface goes on top of the old roof and becomes an integral part of it.

The fabric is lightweight—8 lb per 100 sq ft—and easily applied by unskilled laborers. It is available in rolls of 540 sq ft, weighing 42 lb.

Monoglas fits any surface irregularities and will not wrinkle or curl. It also will not separate from its imbedding material, says the manufacturer. The Monroe Co., Inc., 10711 Quebec Ave., Cleveland 6, Ohio.



Bruckner Boulevard Expressway, Bronx, New York, N.Y. Contractor: Tully & DiNapoli. Engineer: City of New York.

Use The Form that Cuts On-the-Job Costs

Jobs requiring round concrete columns move faster and more smoothly when you use Sonotube Fibre Forms . . . because these lightweight, low-cost forms eliminate many of the "necessary" delays usually associated with concrete construction.

There's no fabrication, no assembly, no form cleaning with one-piece Sonotube Fibre Forms . . . and they place, brace, pour and strip easily and quickly. Highly adaptable, they can be sawed for tie-in with walls or beams, punched for anchor bolts or dowel rods, and cut for utility outlets. *And,* Sonotube Fibre Forms provide a self-cure for concrete . . . you consistently get durable concrete surfaces without the need for expensive curing compounds or time-consuming curing treatments.

In bridges, buildings, or any project calling for round concrete columns, you'll save time, labor and money with Sonoco Sonotube Fibre Forms. There's a type to meet any job requirement . . . in sizes 2" to 48" I.D. Specify length or order standard 18' lengths.

See our catalog in Sweet's

For complete information and prices, write

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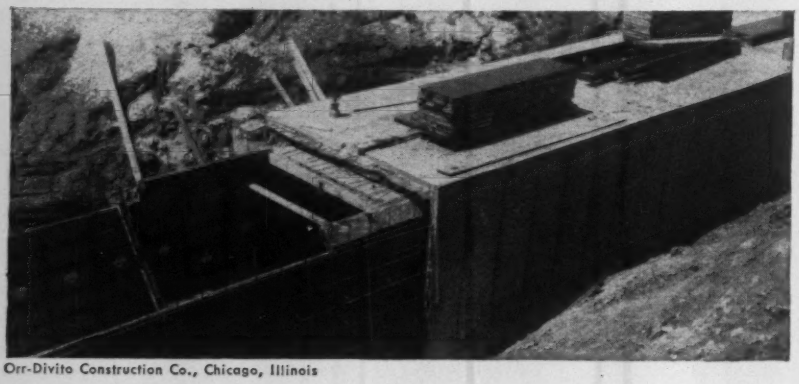
BETTER ROADS with Symons Forms

Tonn and Blank, Inc., Michigan City, Indiana

Bridge . . . Symons standard prefab panels were ganged for arched girders on bridge job. Contractor used 28 ganged sections.



Orr-Divito Construction Co., Chicago, Illinois

Culvert . . . Walls and slabs varied in thickness from 10 to 18". Outside height was 10½' and inside dimensions were 8½' wide by 7½' high.

Symons can help you with your road building problems. Our engineers will prepare complete form layouts and bill of materials. Symons Forms may be rented with purchase option—rentals to apply on purchase price. Information on Symons Steel-Ply Forms sent *free* on request.

Symons CLAMP & MFG. CO.

4265 Diversey Avenue Dept. G-1 Chicago 39, Illinois

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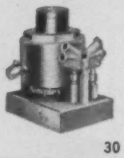
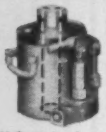
81 HYDRAULIC JACKS & PULLERS to choose from

Self-Contained **STANDARD JACKS** 1½ to 100 tons capacity.





Self-Contained **CENTER-HOLE PULLERS** 30 to 100 tons capacity.

SIMPLEX RE-MO-TROL JENNY UTIL-A-TOOL SOL-TOE **JACKS**

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TEMPLETON, KENLY & CO.

2553 Gardner Road Broadview, Illinois

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Engineers—Fabricators

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Structural Steel

BRIDGES and BUILDINGS

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PHOENIXVILLE, PA.

Subsidiary—Phoenix Steel Corporation

New Product Briefs

Calking Compound Loader

For fast refill of calking guns and cartridges. Loader fits over 50-lb, 5-gal pail of calking material. Two pumping strokes deliver a pound of compound to cartridge or gun. Loader seals out air. FORCE-FLO, INC., P. O. BOX 2442, EAST CLEVELAND 12, OHIO.

Heater Safety Switch

Sensitive circuit breaker for electric baseboard heaters shuts off heater when handkerchief or other objects drop on heater. After a 50F drop, heater switches on again. Safe-T-Stat available on Seaboard products. SEABOARD PRODUCTS CORP., 191 FRELINGHUYSEN AVE., NEWARK, N. J.

Plywood Panels

Prefinished line now includes: butternut, pecan and elm. Unfinished line expanded with maple molding. Total finishes available: 15. E. L. BRUCE CO., P. O. BOX 397, MEMPHIS 1, TENN.

Centrifugal Pumps

Packaged line of small close-coupled, end-suction pumps for air conditioners, cooling towers, hot water circulators and general services. Self-venting vertical discharge. Sizes from ¾ x 1 in. to 3 x 3 in. Capacities to 400 gpm and 150-ft heads. AURORA PUMP DIVISION, NEW YORK AIR BRAKE CO., AURORA, ILL.

Structural Steel

Four series of beams and girders, available with square, hexagonal, octagonal or trapezoid web openings. Also, open-web sections of channels, zees and Hi-Load joists. SHLAGRO STEEL PRODUCTS CORP., SOMERVILLE 43, MASS.

Galvanized Coatings

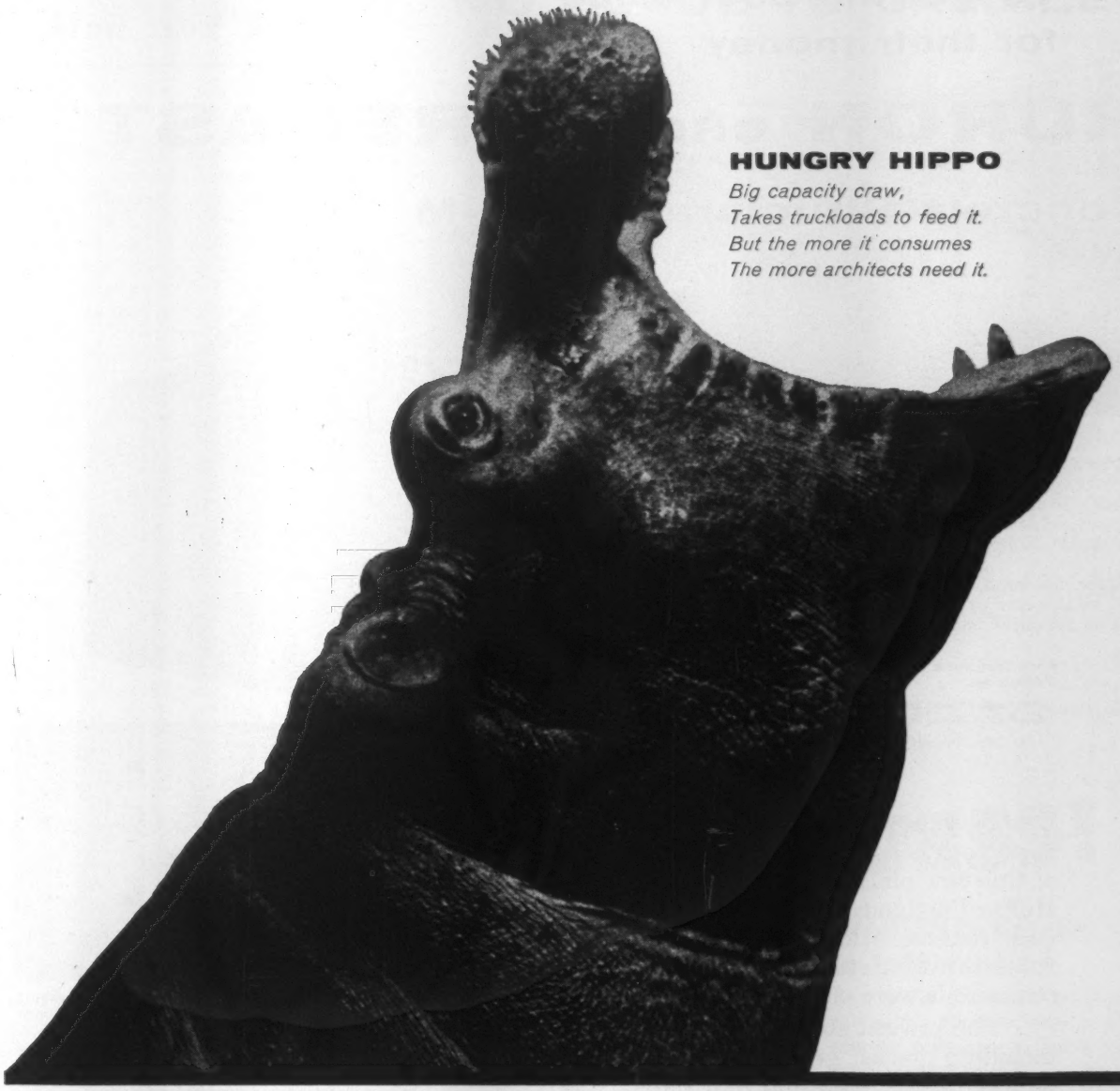
Magnesium additive, developed by Dow Chemical Co., for galvanizing bath is reported to give 20% to 90% longer protective life in extremely corrosive conditions. New hot-dip can handle structural beams up to 63 ft long. NOWERY J. SMITH CO., HOUSTON, TEX.

Concrete Vibrator

Compact electric vibrator. Model EVUO5, ½-hp motor delivers up to 10,000 vpm. For hard to reach areas and small jobs. 6-ft standard shaft length. MARVEL EQUIPMENT CORP., 215 EAGLE ST., BROOKLYN 22, N. Y.

Hardware

Washer for high-stress applications; meets ASTM A-325 requirements. All washers notched three times on circumference for easy identification. JOLIET WROUGHT WASHER CO., JOLIET, ILL.

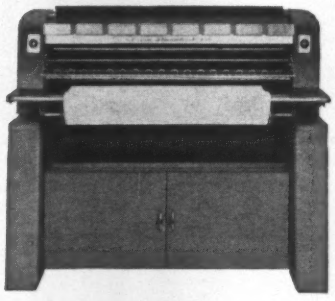


HUNGRY HIPPO

Big capacity craw,
Takes truckloads to feed it.
But the more it consumes
The more architects need it.

This large, economy-size swamp poodle isn't the only character with a big mouth.....

Take our Streamliner 200 (leading architects do). This competent, wide capacity whiteprinter also boasts a big bazoo. 42" wide! And king-size appetite to match. "200" dotes on engineering drawings, specifications, floor plans, etc. Gobbles 'em . . . fast. Neat about it, though . . . crisp, dry prints in seconds. Placid disposition... like its brothers, Streamliner 400 and 100, "200" can be handled by anyone. Sound like a whiteprinter you'd like around? Say no more. Rent, lease, or buy. For the full, high volume, low cost story, mail coupon today.



Remember: for best results from Ozalid Whiteprinters, use Ozalid Paper and Ozalid Supplies... we repeat; use Ozalid Paper and Ozalid Supplies.

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Please send cost-cutting details on Streamliner 200.
Also: Streamliner 400 (42" Floor model)
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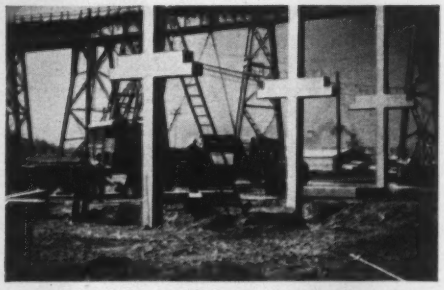
Name_____
Address_____
City_____ State_____

To get the best value for their money

HURON CHOSE PRECAST

Concrete Structurals By A-M

Architectural & Engineering Design by:
Herbert Fleischer, P.E.,
254 5th Ave., New York City

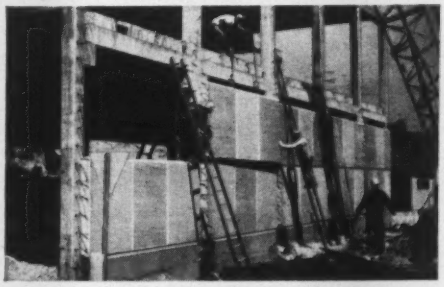


The columns in Huron's 25,000 sq. ft. building are 15" x 16" in cross section by 28'-5" high (two stories).

Economy, as well as speed of erection, were important considerations in the planning of this new office and laboratory addition of Huron Portland Cement Company at their Alpena, Michigan plant. That's why American-Marietta *precast* concrete structurals were chosen for the job.

The precast structural contract—including precast grade beams, columns, wall panels, beams, floor and roof slabs—was substantially completed 18 weeks after the date of its award.

If you are planning the construction of industrial buildings and warehouses, schools, offices or apartment buildings it will pay you to investigate the many advantages of specifying American-Marietta *precast* concrete structurals. Write today for illustrated literature.



The American-Marietta wall panels are 6" thick solid panels with a broomed surface exterior finish.

AMERICAN-MARIETTA COMPANY
CONCRETE PRODUCTS DIVISION
GENERAL OFFICES:
AMERICAN-MARIETTA BUILDING
101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5600

Men and Jobs

Business

William R. Moulton, a project manager for Merritt-Chapman & Scott Corp., will head a new section of the company that is being set up to handle specialized marine construction projects in the New York City area. Mr. Moulton has been project manager for a number of pipeline and harbor projects for M-C&S in this country, Asia, Australia and South America.

John H. Hemsarth has been appointed general manager of the power division of Fluor Corp., Ltd., Los Angeles. For the past 14 years he has been working on power installations with United Engineers and Constructors, Inc., in Philadelphia.

Capt. Joseph A. McHenry, who retired last February from the Navy's Civil Engineering Corps, has been named assistant vice president of J. H. Pomeroy, San Francisco general contracting and engineering firm. Before his retirement, he was District Civil Engineer and District Public Works Officer for the 11th Naval District at San Diego.

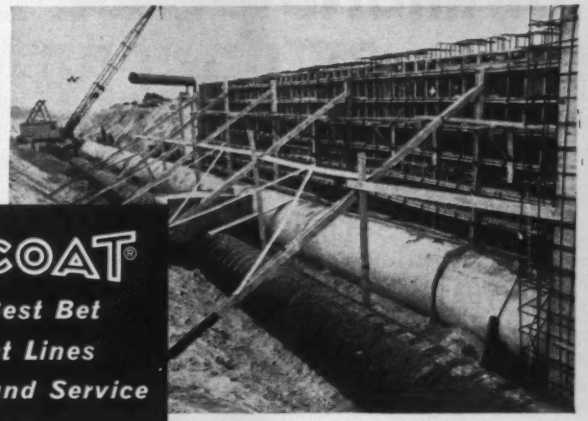
Thomas C. Lightfoot has been elected president of Stewart A. Jellett Co., consulting engineers of Philadelphia. **Roland T. Jellett** has moved up to chairman of the board, but will continue on full time duty. **Edward G. Moss** has been elected vice president, mechanical.

Robert F. Hastings has been elected president of Smith, Hinchman and Grylls Associates, Inc., Detroit architectural and engineering firm. He succeeds **Amedeo Leone,** who moves to the newly created position of chairman of the board. Mr. Hastings, both an architect and an engineer, is a member of the United States Advisory Committee on Housing for the Elderly. He has been executive vice president and treasurer of the firm since 1959.

Richard F. Battles has been elected vice president in charge of engineering of The Thompson & Lichtner Co., Inc., consulting engineers of Brookline, Mass. He joined the firm after World War II and has since designed airfields throughout the world, including an Air Force base in Spain.

Three Louisville, Ky., engineers have joined forces to form Hummel, George & Kleine-Kracht, Inc., consulting engineers. They are **John W. Hummel** and **Robert B. George,** both formerly with Hazelet & Erdal, consulting engineers, and **J. A. Kleine-Kracht,** former chief engineer for architects Hartstern, Louis & Henry.

NO PLACE TO GAMBLE



Joints on steel plant water line are TAPECOATED to provide protection equivalent to coating on the pipe.

TAPECOAT® is Your Best Bet to Protect Lines in Underground Service

You take no chances when you specify TAPECOAT coal tar coating in handy tape form for pipe, pipe joints, fittings, couplings, tanks, tie rods, and conduit on new construction or for maintenance.

Since 1941, TAPECOAT has proved its superiority in resisting moisture, acids, alkalis, and other severe corrosive and abrasive conditions.

TAPECOAT comes in rolls of 2″, 3″, 4″, 6″, 18″ and 24″ widths. It is easy to apply with the use of a torch to bleed the coating which serves as both bond and protection. No skilled help required.

A TAPECOAT sales and service engineer is ready to help you on any corrosion problem. Write for details today.

Originators of Coal Tar Coating in Tape Form

The TAPECOAT Company 1551 Lyons Street, Evanston, Ill.

Representatives in Principal Cities

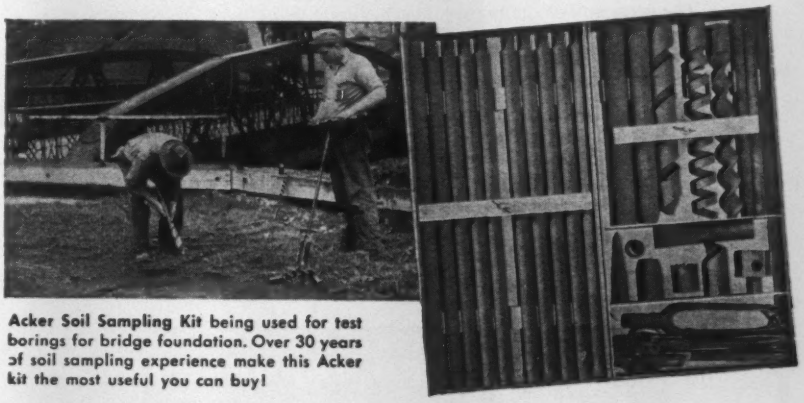
Manufactured and distributed in Canada by The Tapecoat Company of Canada, Ltd.
25 Haas Road, Rexdale, Ontario

DON'T GUESS!

use an ACKER SOIL SAMPLING KIT for accurate sub-surface information

With accurate sub-soil information, you avoid costly trouble later on. And, what better way to get this information than with a portable, easy to use Acker Soil Sampling Kit. For here is a versatile collection of twelve soil sampling tools packed in a handy steel kit that can be carried in any car.

Write today for prices and Bulletin 26ENR.



Acker Soil Sampling Kit being used for test borings for bridge foundation. Over 30 years of soil sampling experience make this Acker kit the most useful you can buy!

ACKER DRILL CO., Inc. 725 W. Lackawanna Avenue Scranton, Penna.

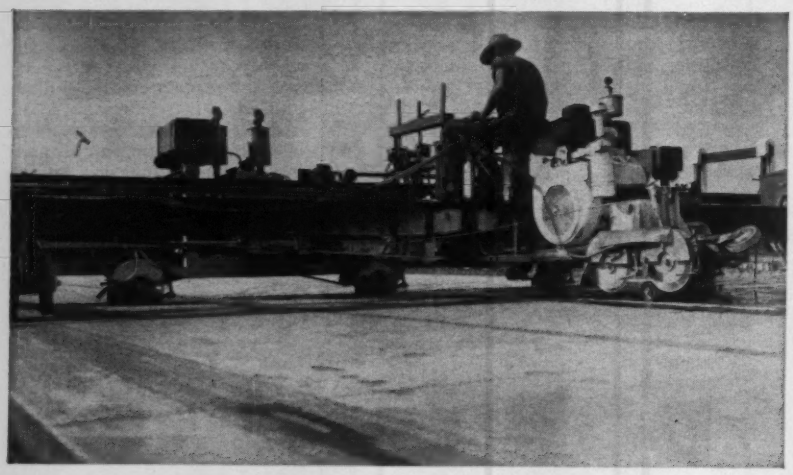
a complete line of Diamond and Shot Core Drills, Drilling Accessories and Equipment

DIAMOND BLADE SAWING OF CONCRETE

Case Report: PENNSYLVANIA Hwy.

COST-$.073 per linear foot

TYPE OF WORK—Pennsylvania Highway
AGGREGATE—Slag aggregate
SAWING OPERATION—Center line only was sawed—all sawing done with diamond blades.
DIMENSIONS—Longitudinal 3" x 3/16".



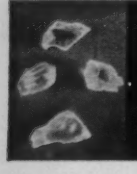
The case history cited above is typical of diamond blade sawing on concrete highway and runway projects. The cost-per-linear-foot figure is all-inclusive, accounting for labor, equipment, diamond saws, overhead and profit.

Diamond blade sawing makes possible significant reductions in time and labor costs. Precisely controlled joints are cut by high-speed, semi-automatic procedure—maintaining maximum concrete strength and homogeneity in the joint areas—without interfering with or delaying the actual paving operation.

The economy of diamond blade sawing is even more interesting and impressive to the maintenance engineer. He has learned that *sawing is producing the only joint that has proved reduction in maintenance costs.* Further, these savings are running as high as 50%!

Modern diamond blade sawing results are a matter of record based on performance in many states.
For detailed information and field-use reports from state highway officials and contractors, write to Engelhard Hanovia, Inc., for Report #101.

Engelhard Hanovia, Inc. is the leading supplier of SND-MB diamond abrasive, a result of research that has greatly increased diamond cutting efficiency, to diamond blade manufacturers



★ENGELHARD HANOVIA, INC.★
INDUSTRIAL DIAMOND DIVISION
113 ASTOR STREET • NEWARK 2, NEW JERSEY

. . . Men and Jobs

John M. Ferry, until recently special assistant for installations to the Secretary of the Air Force, has joined the staff of Metcalf & Eddy, Boston-based consulting engineers. He was building engineer for the New York Telephone Co. from 1927 to 1953.

George W. Vaughn has been elected vice president of Utah Construction & Mining Co. For the past two years, he has been Assistant Secretary for Defense for Naval Affairs in the Pentagon. In 1945, he was naval aide to Secretary of State Stettinius during the United Nations conference.

Fred L. Carlton has joined A. M. Kinney, Inc., Cincinnati, as a project manager. He formerly was an engineer for Giffels & Rossetti in Detroit.

Charles Luckman Associates, architectural-engineering firm of Los Angeles, has acquired full interest in Richard George Wheeler & Associates, San Diego. **Richard G. Wheeler** will remain as president and the firm will continue to operate under the same name.

Harry C. Grieme has been elected a vice president of Walter Kidde Constructors, Inc., of New York City and Houston, Tex. Formerly with the new business department of United Engineers and Constructors, Inc., Philadelphia, he will head the business development activities of Walter Kidde.

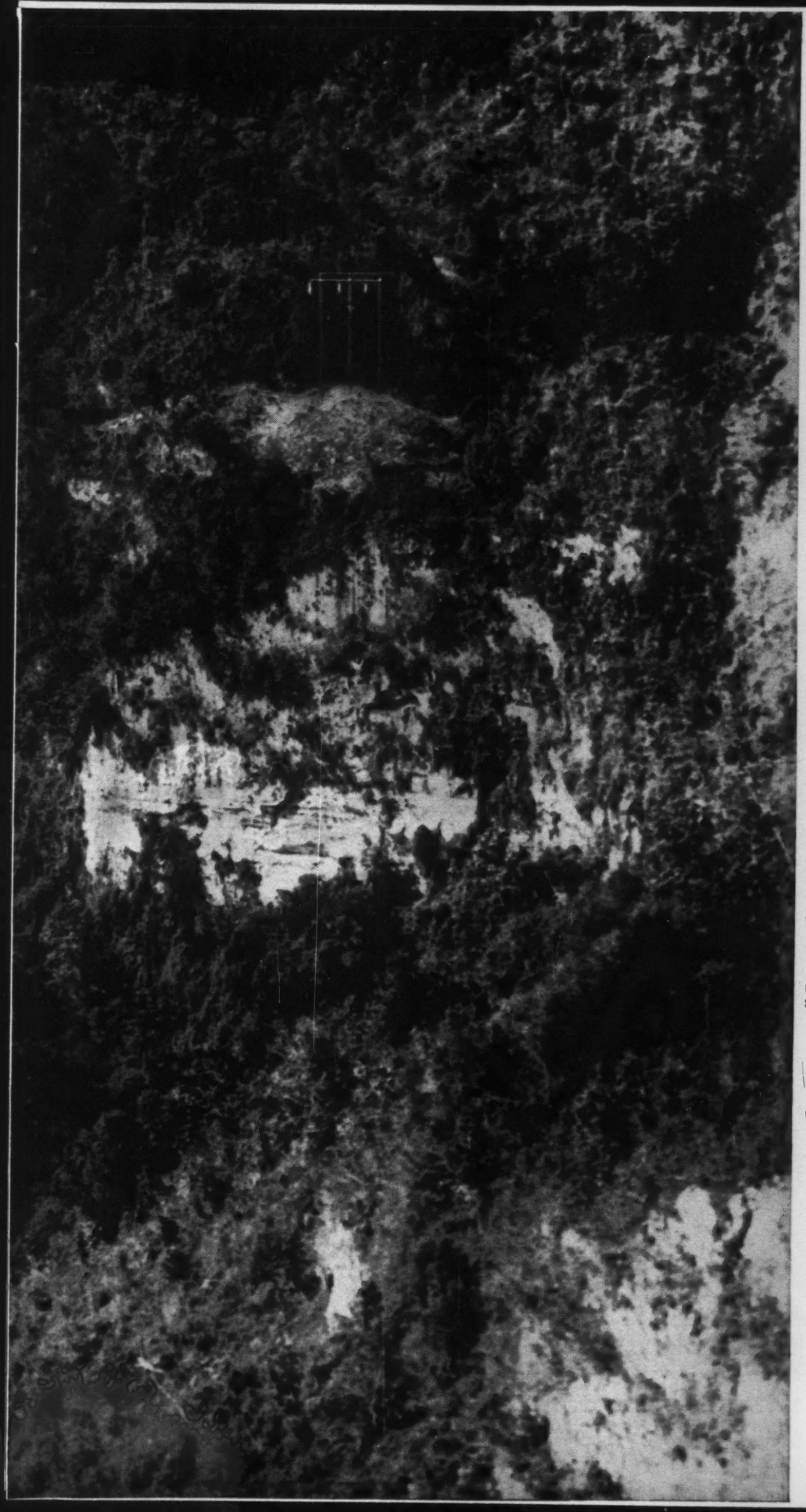
Brig. Gen. Clarence Renshaw and **Spencer Flournoy** have been appointed vice presidents of Frederic R. Harris, Inc., consulting engineering firm of New York City. General Renshaw retired last December as Director of Military Construction for the U. S. Army Corps of Engineers. Mr. Flournoy, who joined the firm in 1953, is now project manager of Ashod, an Israel seaport design project.

Clarence A. Dauber has been appointed to head the thermal power engineering activities of Chas. T. Main, Inc., Boston consulting firm. He presently directs the Civil and Mechanical Engineering Division of the Cleveland Electric Illuminating Co.

I. E. Boberg has been elected to the board of directors of the Chicago Bridge & Iron Co. He has been CB&I's chief engineer since 1945 and engineering vice president for the past four years.

John P. Mulvihill, former Assistant Attorney General and Assistant Chief of the Illinois State Toll Highway Commission's Legal Department, has resumed private law practice. He will specialize in engineering contracts and claims.

Roache & Mercer, consulting engineers of Richmond, Va., have admitted **Gilbert L. Faison** to the partnership. The new company name will be Roache, Mercer & Faison.



The mountains were surrounded by armies of trees and the poles had to be set on the peaks

For the past two years, a Sikorsky helicopter has been used to hoist and truck transmission poles over the wilds of Puerto Rico instead of through them. No time was lost chopping through the woods. No bulldozing of roads. No heavy investment in road equipment and crews. Instead, the poles were lifted over the trees by a Sikorsky helicopter. That's what the Puerto Rico Water Resources Authority recently did. For example, a 7-mile line was completed by the helicopter in a bare nine weeks. In Puerto Rico, setting and stringing that line by conventional methods would normally take an estimated 78 weeks. And there were savings in dollars, too, with reduced operating expenses.

A Sikorsky helicopter can save time and money in difficult terrain. It can also eliminate the problem of clearing a right of way and building expensive access roads necessary for vehicles in any terrain. A Sikorsky representative will be glad to help you analyze your own operation to see if you can benefit from a helicopter. Why not write today on your letterhead?

Sikorsky Aircraft

Division of UNITED AIRCRAFT CORPORATION
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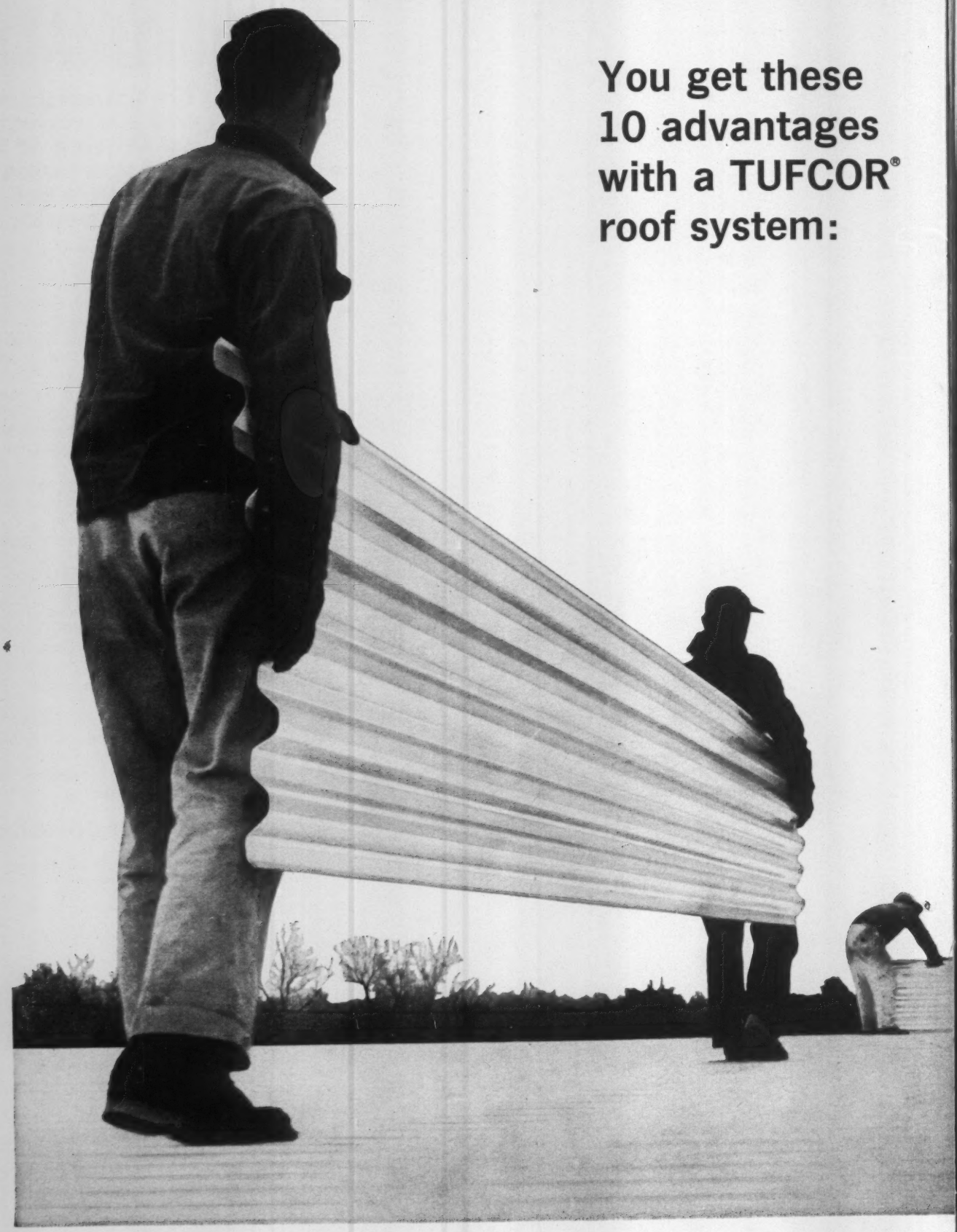

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3. **STRONG STRUCTURALLY.** Tufcor is made of tough-temper steel . . . increases safety factor. Deck system functions as diaphragm . . . stiffens roof framing.

4. **VAPOR BARRIER.** Tufcor system prevents penetration of warm, moist air. Insulating concrete stays dry and effective. Reduces heating costs. Rated 0.4 perms by test.

5. **LIGHTWEIGHT.** Tufcor system weighs 4 to 6 psf less than most types of roof construction, saves framing costs.

6. **GOOD INSULATION.** Insulating concrete of 25 to 30 psf density provides high insulating qualities. Desired U factor is easily obtained by varying slab thickness.

7. **PERMANENT.** Tufcor's generous galvanized coating assures longer life. No maintenance. Inert insulating concrete won't deteriorate.

8. **EASY TO INSTALL.** Rigid Tufcor sheets are easy to handle; weld quickly in place. Insulating concrete can be placed as fast as Tufcor.

9. **FIRM BASE FOR BUILT-UP ROOF.** Insulating concrete provides firm, hard base for built-up roof. Assures good adhesion, resists indentation.

10. **ECONOMICAL.** Tufcor is one of the most economical roof systems available today.

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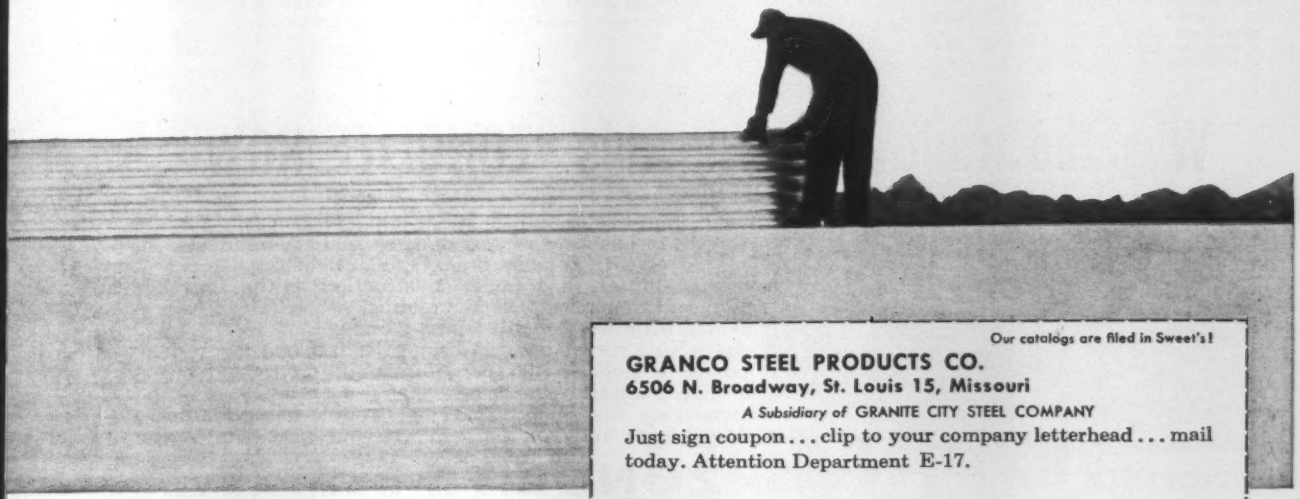

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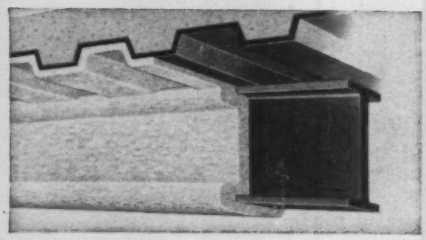
General Contractor—Del E. Webb Construction Co.
Plastering Contractor—George M. Raymond Co.
Material used: Zonolite Acoustical Plastic and Zonolite Plaster fireproofing.

IBM OFFICE BUILDING
Architect—Charles Luckman Associates (successor to Pereira & Luckman)
General Contractor—McNeil Construction Co.
Plastering Contractor—Travis Corporation
Material used: Zonolite Plaster fireproofing.

3540 TISHMAN BUILDING
Architect—Victor Gruen Assoc., Architecture and Engineering
General Contractor—Tishman Realty and Construction Co.
Plastering Contractor—Martin Bros.
Material used: Zonolite Plaster fireproofing.

TRAVELERS INSURANCE OFFICE BUILDING
Architect—Welton Becket & Associates, Architects and Engineers
General Contractor—George A. Fuller Company
Plastering Contractor—A. D. Hoppe Co.
Material used: Zonolite Mono-Kote direct-to-steel decking fireproofing; Zonolite Plaster for fireproofing columns, shafts, stairwells.

Why the trade is calling this "ZONOLITE ROW"



All the high-rise buildings along this section of Wilshire Boulevard in Los Angeles were done by famous architects. All are protected with Zonolite fire-proofing products.

Latest addition (now under construction) is the Travelers Insurance Companies' Office building, where steel is fire-protected with new Zonolite Mono-Kote.

Mono-Kote sprays on, sets firm, dries fast and fissure-free. It bonds to steel at 400 psf., withstands extreme temperature and humidity changes.

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Obituaries

George E. Horr, 72, former executive vice president and vice chairman of the board of Turner Construction Co., New York City. He joined Turner in 1913 as a time keeper, became a vice president in 1941, and was named executive vice president in 1951. He retired in December of 1959, a year after he was elected vice board chairman.

John W. Doty, 82, president of the Foundation Co., New York City. Mr. Doty joined the Foundation Co. as a draftsman in 1903 after graduation from Rensselaer Polytechnic Institute. He became president in 1919 and chairman in 1926. He resigned in 1928 in a policy dispute, but regained control the next year.

David Lynn, 87, former architect of the Capitol. He had charge of the care of the Capitol and other federal buildings in the area from 1923 until his retirement in 1954. During his tenure the new House office building, the Supreme Court Building and the Library of Congress Annex were built.

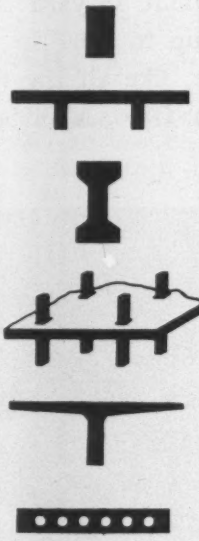
Harrison G. Roby, 78, chief of the Hydro Power Branch in the Office of the Chief of Engineers, Department of the Army, from 1944 until his retirement in 1955. For the past three and one-half years Mr. Roby has been with Tudor Engineering Co. in Washington, D. C. as a consultant to the International Cooperation Administration on hydroelectric projects in the foreign aid program.

Verne O. McClurg, 71, senior partner of McClurg, Shoemaker and McClurg, architects and engineers of Chicago. For many years he served on Chicago's committee on building code amendments and on the city's committee on standards and tests.

John Jaster, 74, Ohio State Highway director and chief engineer for the Cleveland Metropolitan Housing Authority during the Thirties. Recently, he has been an engineer for Horn, Rhinehart & Truthan, Cleveland architects.

Charles Wigton, 75, founder and former president of Wigton-Abbott Corp., engineers and builders, Plainfield, N. J. He retired as president two years ago from the company he founded in 1924, but remained as chairman. Mr. Wigton's company has been a leader in the construction of better looking factory buildings.

Low Cost Design of Prestressed Concrete by Computer . . . .



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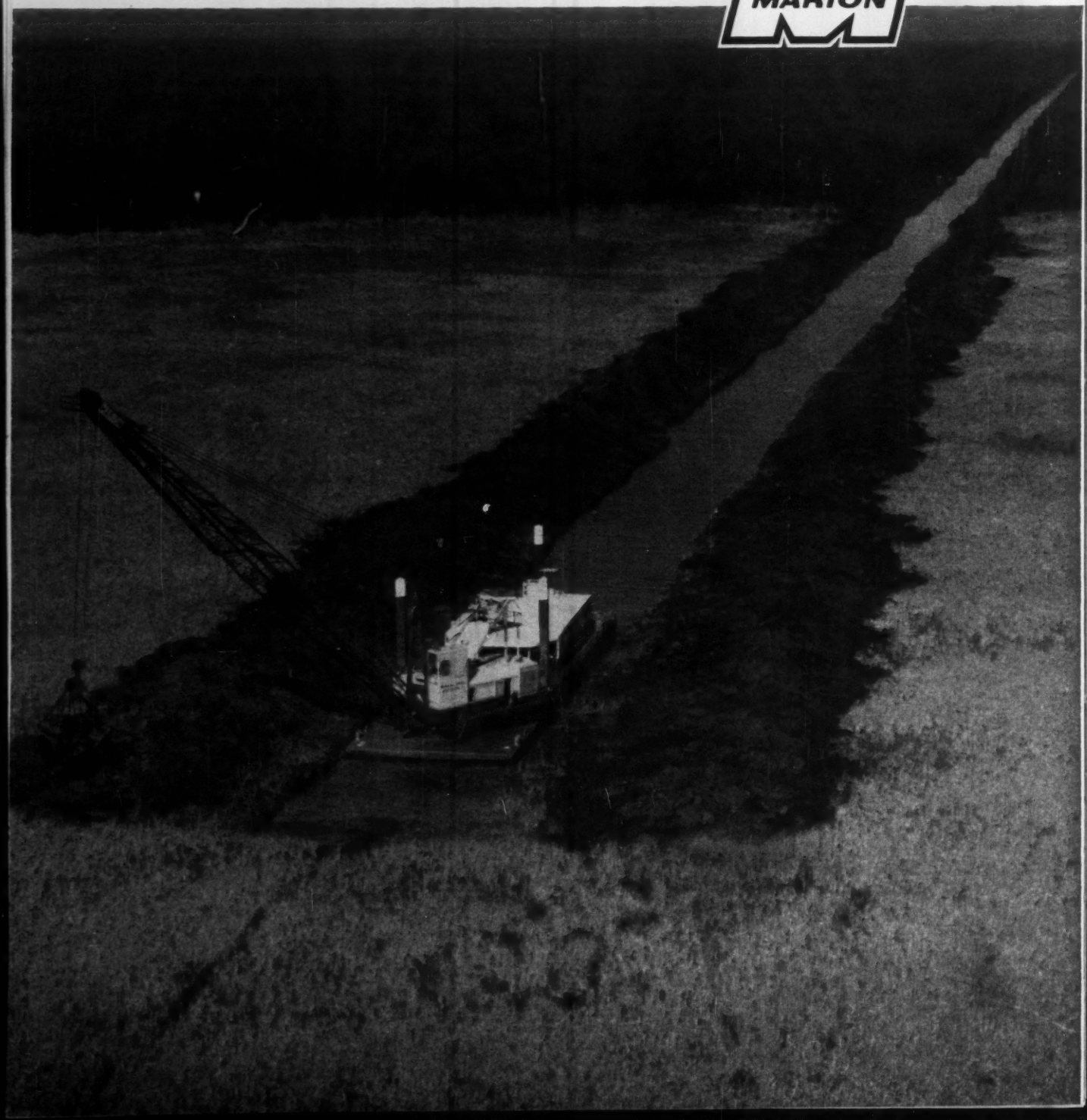
THIS IS MARION QUALITY... and the story of a Do-It-Yourself River.

PROBLEM: Dig a canal 39′ wide and 8′ deep through the cypress-studded swamp lands in southern Louisiana for a network of pipelines that will help release the vast oil and gas resources waiting to be tapped in this area. DIGGING: Murderous. Complex systems of cypress stumps, sometimes measuring 20′-25′ in diameter, ignore the efforts of conventional excavating equipment. SOLUTION: A barge-mounted 183-M equipped with a specially-built 15-yard clamshell bucket on 130′ of boom. It slugged along at an average of 800′ per day . . . up to 2000′ in better going. CONCLUSION: There are excavators and there are excavators. This unit, like all the rest of the Marion line, is worthy of the name. Marion Power Shovel Company, Marion, Ohio. A Division of Universal Marion Corporation.

MARION



Steel prices take spotlight in . . .

California Bridge Award

This $14 million San Pedro-Terminal Island suspension bridge will be southern California's first toll bridge, and the state's third longest span. Stretching 6,010 feet across Los Angeles harbors main channel, only the Golden Gate and San Francisco-Oakland Bay bridges will be longer. The bridge will be near the west end of Terminal Island, slightly north of the present route of the Terminal Island Ferry, which it will replace.

Kaiser Steel Corp., Montebello, Calif., took the superstructure award at $11,374,000, only 1.7% under second low, Peter Kiewit Sons' Co., Arcadia, Calif., and 2.1% short of the high. Steel is the big item in this close award, and it drew some varied prices. Structural steel for approach spans ranged from a low of $0.205 a unit to $0.2205 for 7,580,000 lb, while 5,550,000 lb of structural steel for the main towers, jumped from Kaiser's low of $0.28 to a high of $0.3995. Suspension cable prices soared from a low of $0.69 for 2,540,000 lb to the high, $0.835 a lb.

Guy F. Atkinson, Long Beach, Calif., low at $2,634,041, carried off the substructure contract 4.1% under Peter Kiewit Sons' Co., second low. Atkinson was low on 58,000 cu yd of imported borrow with a price of $0.80 a yard; high was $1.20. Steel for the substructure, ranged from prices of $8.50 to $9.60 a foot for furnishing 82,000-ft of 14BP117 piling, and from $6.00 to $8.00 for 17,840 feet of 14BP89 piles. Steel reinforcing bars, ranged from $0.09 to $0.12 a unit for 2,400,000 lb, and 8,600 lb of structural steel from $0.25 to $0.50 a lb.

The superstructure will have a 1,500-foot main span with two 506.5 foot anchor arms and 3,497 ft of approach girder spans. The roadways will be 52.0 ft wide and the steel towers 335.67 ft high. Navigation vertical clearance will be 185 ft.

All approach span concrete bents for the substructure will rest on steel piles on the San Pedro side and concrete piles on the Terminal Island side. Both the anchorage and main tower footings will be supported by steel piles.

Class A concrete, for both substructure and superstructure, will have a cement content of 6 sacks per cubic yard.

The toll bridge accounts for 67% of the $21 million San Pedro-Terminal Island Project. $12,000,000 in state highway funds have already been made available for the project, plus $4,000,000 in state highway user taxes allocated to the City of Los Angeles and Los Angeles County. The additional $5 million needed will come from the sale of San Pedro-Terminal Island Bridge revenue bonds.

Prevailing wage rates include: carpenter, $3.825/hr; concrete mixer operator (mobile), $4.21; structural and ornamental ironworker, $4.275; reinforcing ironworker, $4.025; laborer, $3.08; cement mason, $3.85; cribber or shorer, $3.44; dump truck driver, under 4 yards water level, $3.365.

The bidding included:

Superstructure

1C	Kaiser Steel Corp., Montebello, Calif.	$11,374,000
2	Peter Kiewit Sons' Co., Arcadia, Calif.	11,567,950
4	United States Steel Corp., San Francisco, Calif.	11,621,300

Bids: 3-23-61 Items	Unit	Quantity	Unit Prices 1C	2
Conc, cl A	cy	20,080	$44.00	$43.00
lightweight	cy	8,750	84.00	90.00
Waterstops, rubber	lf	984	7.31	2.50
Steel, bar reinf	lb	3,800,000	0.105	0.115
str, approach spans	lb	7,580,000	0.21	0.205
main towers	lb	5,550,000	0.28	0.319
suspended spans	lb	6,555,000	0.31	0.305
Met work, anchorage	lb	730,000	0.27	0.30
Cable, suspension, bri	lb	2,540,000	0.82	0.835
Ropes, suspender	lf	42,500	5.30	5.00
Wire, wrapping	lb	90,000	1.27	1.15
Steel castings	lb	482,000	1.03	1.00
Bearing elements, self-lub	lb	4,200	2.00	2.20
Met, misc	lb	49,500	0.41	0.45
Rope, hard	lf	11,900	3.35	3.00
Clean & paint, str steel	ls	job	720,725	680,000
Railing, barrier	lf	7,200	12.30	12.00
met beam bri	lf	52	15.70	5.00
Sign str, steel	lb	2,150	0.85	1.00
Navigation & maint equip	ls	job	143,188	140,000
Lgt sys, highway	ls	job	31,850	40,000

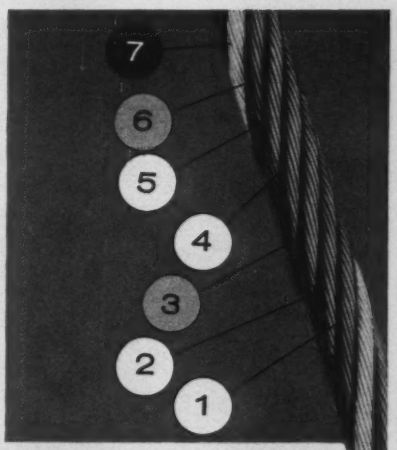
Substructure

1C	Guy F. Atkinson, Long Beach, Calif.	$2,634,041
2	Peter Kiewit Sons' Co., Arcadia, Calif.	2,746,000
4	Massman Const. Co., Kansas City, Mo.	2,990,795

Bids: 3-23-61 Items	Unit	Quantity	Unit Prices 1C	2
Clear & grub	ls	job	$12,500	$25,000
Water supply, develop	ls	job	7,500	10,000
f & apply	Mgal	2,000	2.00	1.25
Exc, str, tp A	cy	5,600	9.00	4.00
str	cy	9,820	2.25	1.80
Backfill, str	cy	2,785	3.75	4.00
Borrow, imported	cy	58,000	0.80	1.15
Piling, steel sheet, encl	ls	job	299,000	204,219
conc, f	lf	13,600	4.70	4.00
drive	ea	228	200.00	180.00
steel, 14BP117, f	lf	82,190	9.00	8.50
14BP89, f	lf	17,840	7.00	6.00
drive	ea	990	205.00	400.00
Conc, cl A	cy	15,000	40.00	42.00
footing block	cy	8,850	20.00	25.00
Waterstops, rubber	lf	165	2.00	2.00
Steel, bar reinf	lb	2,400,000	0.09	0.095
str	lb	8,600	0.42	0.50
Met, misc	lb	15,400	0.50	0.35

Completion time: superstructure, total contract—680 working days; substructure, total contract—360 working days
Liquidated damages: superstructure, total contract—$500 per day; substructure, total contract—$500 per day

ENR Building Cost Index (1913=100) 20-cities average—562.89
ENR Construction Cost Index (1913=100) 20-cities average—634.16



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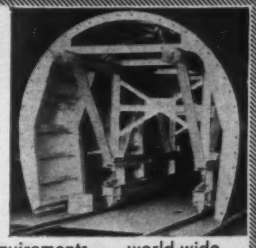
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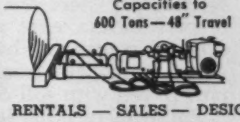
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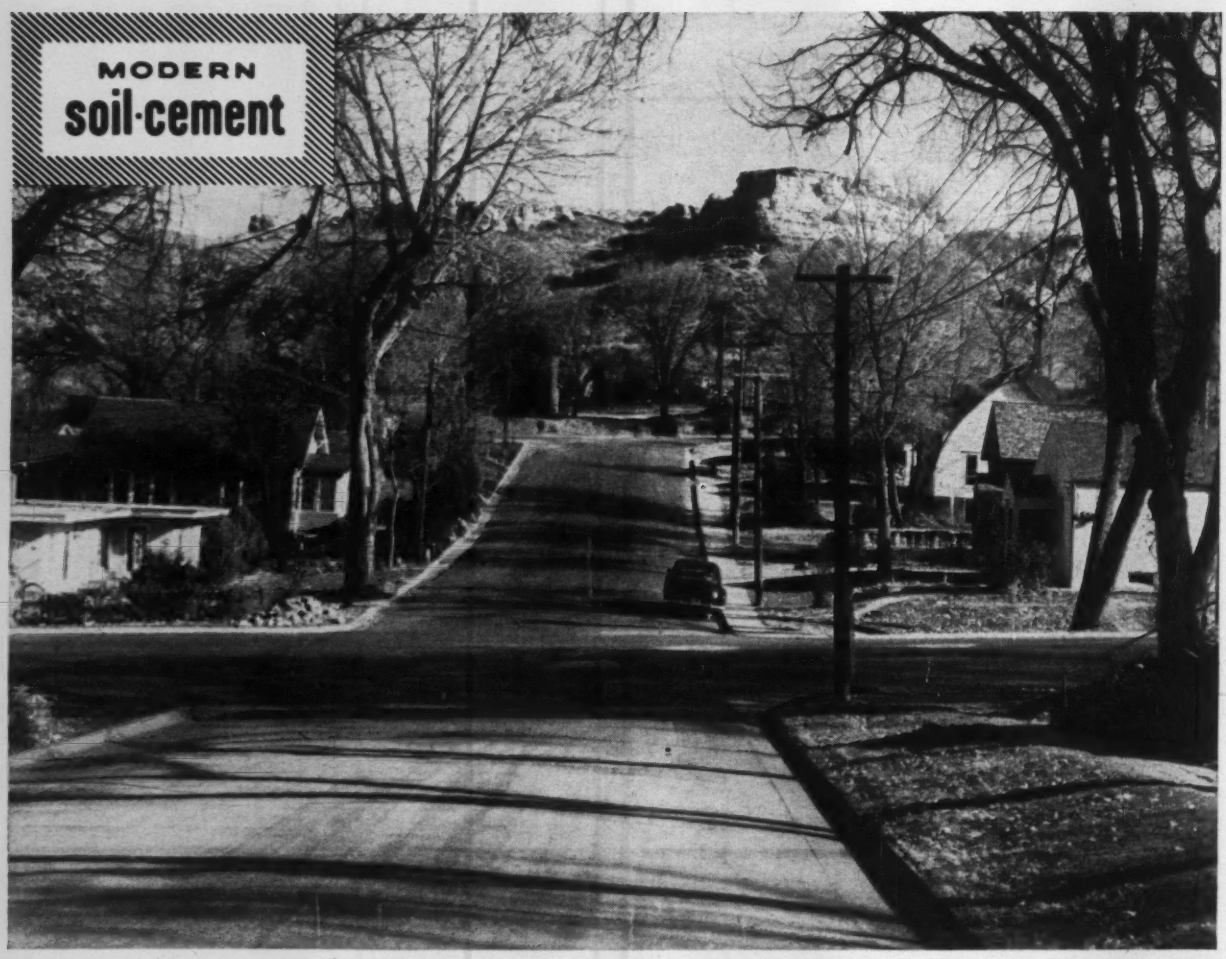

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Soil-cement pavement for 84 blocks of streets bid at 18% under competition

The lowest-cost, precision-built pavement there is! 75% of the materials are usually free!

When officials of Wray, Colorado, took bids for paving 84 blocks of streets, they found that soil-cement would save them 18% compared to the cost of flexible pavement. So satisfactory were the results that 8 more blocks were added to the original contract. Thus, 92 blocks (8 of which are commercial) are now paved with soil-cement.

Soil-cement costs less to lay because the main ingredients can be soil, gravel or broken-up blacktop. Mixed with portland cement and water, rolled solid and topped with a thin bituminous surface—the pavement's finished! It's the fastest-laid pavement there is. Experienced crews using modern machines lay up to one mile a day.

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Materials Prices

Monthly Market Quotations By ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, June 22; Next, July 20.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, June 29: Next, July 27.
- Wage Rates, Building Board, Lath, Insulation: Last, June 29; Next, Aug. 3.
- Cement Aggregate, Ready Mixed Concrete Asphalt: Last, July 6: Next, Aug. 10.

Iron and Steel Products–F. O. B. Warehouse, Per 100 lbs., Base Price

Item	Unit	Atlanta W	Balti-more	Birming-ham	Boston	Chicago	Cin-cinnati	Cleve-land	Dallas	Denver	Detroit	Kansas City	Los Angeles/#	Minne-apolis	New Orleans	New York	Phila-delphia	Pitts-burgh	St. Louis	San Fran-cisco	Seattle	Montreal	Toronto
Struct. shapes	Cwt	$7.52–8.15sV	$9.70	$9.00cty	$8.00–9 30KssV	$7.07–8.34ysV	$7.64–8.91stysV	$7.46–8.73tysV	$7.51–9.18MsV	$8.24cK	$7.64–8.91MsV	$9.90sT	$8.70–10.45ktsV	$7.78–8.17ysV	.....	$7.85–9.13Vss	$7.35–8.40ssV	$7.07–8.34ayV	$7.30–8.57stxyV	$9.40–11.25ssV	$8.60–10.80aDsV	$7.90–8.60CF/8.20–8.90AiF	$9.20H
Reinf. bars, new steel	"	7.57	9.00T	8.51–9.94tyV	8.75t	6.50–6.65guV	8.21t/	6.70ct	8.50	9.35	7.37	8.21N	7.35frt	9.26T	$8.00gktz	8.60ty	8.43uy	7.35y	7.35/txQ	8.25jS	8.85DM	7.00/7.50FGi	7.60
Reinf. bars, rail steel	"	.....	.....	8.51–9.94tyV	8.75t	6.50–6.65guV	.....	.....	8.50	.....	11.85	.....	.....	9.26T	.....	8.60y	9.30y	.....	7.35/txyQ	.....	.....	7.00/7.50FGi	7.60
Expanded metal lath k std. diamond mesh, 3.4 lb	"	43.50	44.50	61.00pK	47.00K	52.00/U	44.50Kg	42.50KL	44.00u	51.17n	67.00 O	51.00	55.00S	44.50K	63.00K	50.00n	45.50/U	58.50/rw	64.00wxK	53.00S	67.00/nD	65.700h	49.50qI
std. ribbed, 3.4 lb	"	48.00S	49.00	67.00pK	51.00K	63.00/U	48.50mnKg	46.50KL	49.00w	56.35n	74.00 O	55.5G	64.00S	49.00K	69.G0K	58.00no	50.00/U	64.50/rw	65.00wxK	58.00S	73.50/nD	70.20h	44.85qI

Reinforcing Bar Extras, per cwt, N. Y.—• Quantity (applies to LCL shipments only): under 1,000#, +$1.80; 1000–1999# +$1.50; 2000–4999#, +$1.20; 5000–9999#, +90¢; 10,000–19,999#, +60¢; 20,000–29,999#, +30¢; 30,000–39,999#, +10¢; 40,000# & up, none. • Size†: #2 +$2.50; #3 +$1.40; #4 +$1.00; #5 +70¢; #7, #8, #9, #10, #11 +50¢ • Bending: heavy, +90¢; light +$2.20 (except in New York City and surrounding metropolitan area where bending must be done on the job). • Engineering (details and placing from designs by others): over 500 tons, +45¢; 200–499 tons, +50¢ but not over $4500; 75–199 tons, +65¢ but not over $2000; 20–74 tons, +75¢ but not over $975; 5–19 tons, +85¢ but not over $300; under 5 tons, +$1.00 but not over $85. Min. charge $25. Design only: +60¢.

Structural Shape Extras, per cwt, Chicago, Cincinnati, Cleveland, Dallas, Detroit, New York, Philadelphia, St. Louis and Pittsburgh. Item; 10,000# and over, base, 5,000–9,999#, +10¢, 2,000–4,999#, +35¢, 1,000–1,999#, +85¢, 400–999#, +$1.75, 100–399#, +$1.75, under 100#, +$1.75. Order: 20,000# and over, base, 10,000–19,999, +25¢, 5,000–9,999, +65¢ 2,000–4,999, +$1.50, 1,000–1,999, +$2.50, 400–999, +$4.00, under 400, +$8.00. Item extras do not apply in Chicago, Cleveland, Cincinnati, Detroit and St. Louis. */ Delivered. •* Aver. of Canadian & American. •/# add 4% sales tax. •a 2000–4999#. •b 10,000–19,999#, fob city. •c 20 tons or over. •d 10,000–29,999#. •e Intermediate struct'l. •f incl. delivery in free zone. •g CL. •h list price; dominion tax exempt; add provincial and municipal taxes. •i add provincial and municipal sales taxes. •j intermediate and hard grade. •k fob city. •l delivered; contractor to do unloading. •m copper alloy. •n LCL. •o asphalt coated. •p 500 sq yd. or more. •q 2.5 lb. •r less 2% disc. for cash. •s 10,000# item in 20,000# order. •t less ½% disc. 10 days. •u add 10¢ switch. •v incl 15¢ del. •w truck lots. •x add 2% sales tax. •y add 15¢ del. •z add 10¢ del. •A American made. •C Canadian made. •D ½% for cash. •E 30,000# or over. •F Federal tax exempt for bidgs. •G add 10¢ del. •H $8.85 without tariff charges. •I 3 ib $60.00. •J 4 ib $47.50. •K less 2% disc. 10 days. •L F.o.b. Youngstown plant. •M 5,900–9,999#. •N 2,000–19,999#. •O 100 sy lots. •Q 5 tons to CL. •R revised. •S less 2% disc. 10th. •T less ½% disc 10th of mo. •U less 2% disc. 10 days. •V varies according to type and size. •W add 3% sales tax

Iron and Steel Products–Base Mill Prices Carlot Quantities

Item	Unit	Birming-ham area	Chicago area	Pitts-burgh	Buffalo area	Cleve-land	Youngs-town area	Geneva	Los Angeles	Pueblo
Struct. Shapes	cwt	$5.50	$5.50	$5.50	$5.50	.....	.....	$5.50	$6.20	.....
Plate Carbon Steel	"	5.30	5.30	5.30	5.30	.....	.....	5.30	.....	.....
Reinf. Bars (billet)*	"	5.675	5.675	5.675	5.675	$5.675	$5.675	.....	6.375	.....
Rivets, ½" struct	"	12.25	12.25	12.25	12.25	12.25	.....	.....	.....	.....
Sheet Piling (base)	"	.....	6.50	6.50	6.50	6.50	.....	.....	6.50	.....
Steel Rails, standard	Ton	110.50	110.50	110.50	110.50	.....	.....	.....	.....	.....
light	"	130.00	130.00	130.00	130.00	.....	.....	.....	.....	.....
Track Supplies										
Angle bars	cwt	6.975	6.975	6.975	6.975	.....	.....	.....	.....	$6.975
Std. spikes	"	9.75	9.75	9.75	9.75	.....	9.75	.....	9.75	9.75
Tie plates	"	6.60	6.60	6.60	6.60	.....	.....	.....	6.875	6.60
Track bolts	"	.....	.....	14.75	14.75	14.75	.....	.....	.....	.....

*WROUGHT STEEL PIPE (Full standard weight) Discount from list; see footnote

Mill	2½ & 3 in.,* Black %	2½ & 3 in.,* Galv. %	3½ to 6 in.,* Black %	3½ to 6 in.,* Galv. %
Lorain, Ohio	13.75	+3.50	+1.75f	+19.50f
Aliquippa, Pa.	13.75	+3.50	3.25a	+14.50a
Sparrows Pt., Md.	17.25	+List	.....	.....
Benwood, W. Va.	13.75	+3.50	.....	.....
Youngstown, O.	13.75	+3.50	3.25	+14.50a
Indiana Harbor, Ind.	12.75	+4.50	2.25ab	+15.50a
Sharon, Pa.	13.75	+2.50	3.25ab	+13.50ab
Wheatland, Pa.	13.75	+3.50	3.25a	+14.50a
Etna, Pa.	13.75	+3.50	.50de	.....
Fontana, Calif.	0.75	+16.50b	+9.75ab	+27.50ab

* Threaded and coupled: a 3½ to 4 in. b to 1, 5 and 6 in. c 6 in. d Seamless 5 in.

WROUGHT STEEL PIPE, butt or continuous weld: Deduct (+) or add (−) these "discounts" from or to the following carlot list prices to get mill prices. Price per ft. (based on approx. $200 per net ton): 2½ in., 58½¢; 3 in., 78½¢; 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Add freight for destination price.

WROUGHT IRON PIPE, lap weld: List prices per ft. same as for wrought steel pipe, but add these "discounts" to get Pittsburgh mill price. 2½ to 3 in., black 106%; galv. 139%; 4 to 6 in., black 103%; galv. 133%. Add freight for destination price.

• Fairless Works, $5.825 Revised. These prices are nominal. Major reinforcing bar producers now quote prices on the basis of individual inquiries.

WELDED FABRIC REINFORCING, FOB Joliet, Ill., Donora, Pa., Monessen, Pa. mill, per 100 sq. ft.: 4 x 18 in., No. 5 & 10 wires....$7.04; 4 x 12 in., No. 8 & 12 wires....$2.62; 6 x 8 in., No. 6 & 6 wires....$4.17

Plumbing, Heating, Water, Sewer Pipe and Tubing

Item	Unit	Atlanta W	Balti-more	Birming-ham	Boston	Chicago	Cin-cinnati	Cleve-land	Dallas	Denver	Detroit	Kansas City	Los Angeles/#	Minne-apolis	New Orleans	New York	Phila-delphia	Pitts-burgh	St. Louis	San Fran-cisco	Seattle	Montreal	Toronto
C. I. Pipe Price Index	a	130.6	140.2	125.8	143.2	140.0	135.6	141.8	137.9	145.1	142.1	138.6	148.6	145.0	132.4	138.6	137.9	142.9	135.7	148.6	149.0	.....	.....
Asbest. Cem. Pipe, 6"	lin. ft.	$1.51	$1.51	$1.51	$1.51	$1.51	$1.63	$1.63	$1.59	$1.59	$1.51	$1.51	$1.59	$1.51	$1.51	$1.51	$1.51	$1.51	$1.48	$1.59	$1.59	.....	.....
6" transite pipe	" "	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.59	1.51	1.51	1.59	1.51	1.51	1.51	1.51	1.51	1.51	1.59	1.51	.....	.....
Asbest. Cem. Pipe, 12"	" "	2.36	2.19	2.26	2.19	2.19	2.19	2.19	2.26	2.36	2.19	2.26	2.19	2.26	2.26	2.19	2.19	2.19	2.26	2.19	2.19	.....	.....
12" transite pipe	" "	2.48	2.30	2.37	2.30	2.30	2.30	2.30	2.37	2.48	2.30	2.37	2.30	2.37	2.37	2.30	2.30	2.30	2.37	2.30	2.30	.....	.....
Clay Sewer Pipe																							
8 in. ASTMC 13-55	ft./	0.546rn	0.665	0.50r	0.84qrtL	0.93rm	0.595	0.66BCN	0.575/B	0.56nr	0.97nk	0.62r	0.86bl	1.05oB	0.566r	0.94	0.75	0.94K	0.62r	0.86/d	0.88bk	1.13u	0.76F
12 in. " "	"	1.04rn	1.20	0.95r	1.55qrtL	1.78rm	1.15	1.27tBC	1.09/B	1.00nr	1.86nk	1.125r	1.86blS	1.90oB	1.078r	1.76	1.44/	2.01K	1.23r	1.86/d	1.86kb	2.00u	1.43F
24 in. ASTMC 200-55T	"	4.44rn	3.05	4.14rw	6.39qrtM	7.52rm	4.95	8.47tBC	4.75/B	4.98r	7.48nk	6.324br	7.55blS	8.00oB	5.65r	12.89	9.49/v	8.79K	5.10r	7.53/d	7.61k	7.00u	5.70F
36 in. " "	"	.....	12.71	13.50rw	.....	21.16rm	14.35	23.45tBC	10.53/bB	.....	19.95nk	16.86r	16.34blS	.....	.....	35.61	25 73/v	24.15K	12.95rS	18.00/d	.....	13.50u	.....
Clay Drain Tile 6 in. V	M ft.	200.00sr	187.80	295.00rx	244.00r	220.00Br	177.50	179.40mBC	.....	460.00nr	212.00mk	315.00r	410.00lS	.....	240.50pr	240.81	225.00/	190.00	180.00r	360.00/l	260.00ck	288.00	175.00F
8 in. V	M ft.	.....	289.20	430.00rx	348.60r	330.00Br	274.60	276.60mBC	.....	640.00nr	327.00mk	625.00r	590.00lS	.....	566.00	369.84	345.00/	295.00	300.00r	620.00/l	135.00	545.00	290.00F
Concrete Sewer Pipe, 12"	ft./U	0.95mKr	1.01	1.75rS	1.56S	1.30	0.85rA	1.35	1.27BD	1.05m	1.40k	1.68r	1.30vE	2.19DFH	1.41ilR	1.50/B	2.00/h	1.66DB	1.25i	105.00/Q	1.90ky	1.17D	1.27F
24 in.	ft./U	3.75mKr	2.75	2.75rS	3.60S	4.00	3.25rA	2.40P	2.95BD	3.50m	5.23k	4.20r	3.85fvE	6.31DFH	3.76il	3.60/B	4.30/h	3.93DB	4.05	3.30/Q	4.50ky	3.11jpD	5.19F
Copper Water Tubing																							
3/8", Type L	ft.	0.1480	.....	0.1650	0.1420	0.1420	0.1420	0.1420	.....	0.1680	0.1588	0.1320	0.1620	0.1620	0.1680	0.1420	0.1620	0.1441	0.1420	0.1480	0.1450	0.2089U	0.3344UV
1/2", Type L	"	0.1670	.....	0.1840	0.1630	0.1630	0.1630	0.1630	.....	0.1900	0.2210	0.1480	0.1840	0.1840	0.1900	0.1630	0.1840	0.1900	0.1630	0.1670	0.1640	0.2450U	0.3485UV

•† Extra quality. •/ delivered. •/# + 4% sales tax. •a **PRICE INDEXES or CENTRIFUGAL CAST IRON PIPE** (Include carload freight allowed to city). These also serve as the **HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S. PIT CAST IRON PIPE.** F.O.B. Foundry Price Indexes Birmingham, Ala., 125.8; Burlington, N. J., 134.6. For explanation of index see ENR Sept. 29, 1955 page 139. •b Extra strength. •c 4-in., $130. •d SS361-A. •f 21 in. •g culvert pipe; reinf., ASTM C 75-56. •h reinf., ASTM C 75-54. •i reinf., ASTM C 76-55. •j centrispun. •k less 2% disc. for cash. •l fob plant. •m truck del. •n LCL del., fob truck. •p less 5% disc. 10th. •p freight allowed to destination in city. •u 35,000# minimum. •r less 2% disc. 10 days. •s 1 ft lengths. •u CSA A 60. •v standard strength. •w SS; add 20% for d.s. •x fob city. •y Reinforced. •z Upper value in range based on both truck lots and less than truck lots, fob city; lower value truck lots delivered. •A single strength. •B truckload. •C less 2% disc. 15th. •D ASTM 76–57. •E less 1% disc. 10 days. •F less 2% disc. 30 days. •G LCL. •H CL. •I fob origin, freight allowed. •J reinf. B14–15. •K Less 2% disc. 15 days. •L ASTM 13–57. •M ASTM 200–57. •N 2 ft lengths. Truckiots. •O add 2% Sales Tax. •P 18 in. •Q less 1% disc. 10th. •R revised. •S ASTMC 72, 12" 1.55, 24" 4.00. •T Second price transite pipe. •U Type K. •V including 11% sales tax, less 20% in lots under 6,000 ft. •W add 3% sales tax

Bid Asked—Low Bidders—Contracts Awarded—

NEW ENGLAND

BUILDINGS—LB & CA

▲ **Joseph Rugo, Inc.**, 115 Homes Ave., Dorchester, Mass., LB **$5,434,000**, est. $1,000,000, (10 bidders), Phase 1, Mass 35-1, HOUSING, Riverside Rd., SPRINGFIELD, MASS. City Housing Auth., Robert Dyer Circle, Springfield, Mass. BA 6/29. CD 6/21/61.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **N. Y., West New Brighton**—BA 8/1—New York City Housing Auth., 299 Broadway, New York, Zone 7, fdns. and general constr., heating and ventilating, electric work, plumbing for West Brighton HOUSES, Proj. No. NY-5-40 Section II, incl. Bldg. Nos. 9 to 22 (inclusive), Broadway, Castleton Ave., Alaska St. and line separating Section I, from Section II, Richmond Boro. Plans deposit $75. CD 11/27/59.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—Triborough Bridge & Tunnel Auth., Administration Bldg., Randall's Island, New York, Zone 35, BRIDGE,

United States Steel Corp., 71 Broadway, New York 6, N. Y., CA **$36,649,577**, Narrows Bridge Contr. No. NB-6, suspended structure and decks on anchorages to incl. steel work and concrete paving for two level suspended structures. BA 6/28. CD 6/30/61, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 6/29, ROAD,

Franklin Contg. Co., U. S. Hy. 46, Little Falls, N. J., LB **$4,678,772**, (3 bidders), major interchange connecting Interstate Rte. 80 with Rte. 17, Bergen Co. CD 6/14/61.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 7/5, ROADS,

Franklin Contg. Co., U.S. Hy. 46, Little Falls, N. J., LB **$3,598,772**, constr. 2 mi. new Interstate freeway running through Boonton to relieve congestion on sections of Myrtle Ave., Washington Ave. and Parsippany Blvd. and Morris County's Rockaway River Bridge, Morris Co. CD 5/29/61.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg, ROAD,

Putman and Greene, Inc., Box 2082, Station A, Fort Wayne, Ind., CA **$4,122,037**, 17,784 ft. separated RCC hy., 24 ft. wide each side of median area; four bridges, Western Sect. of Brookville bypass, on Keystone Shortway, Jefferson Co., BA 5/26/61. CD 6/1/61, under LB.

BUILDINGS—LB & CA

▲ **Foster-Newman Contg. Co., Inc.**, 3622 13 Ave., Brooklyn 17, N. Y. and **Rosoff Bros., Inc.**, 369 Lexington Ave., New York 17, N. Y., CA **$7,227,000**, general contract steel frame, brick mat. fdn. OFFICE, Bldg. 12, Department of Labor, Div. of Employment, Campus Site, Proj. 16349, ALBANY, N. Y. State Dpt. P. Wks., State Office Bldg., Albany 1, N. Y. BA 6/14, CA 6/19. Grand total $9,992,920. CD 6/20/61, under LB;

Tougher Heating & Plumbing Co., Inc., 175 Broadway, Albany, N. Y., CA **$1,571,920**, HEATING, Office Bldg. 12, (Albany, N. Y.);

Nager Electric Co. Inc., 426 Broadway, Brooklyn 11, N. Y., CA **$1,194,000**, ELECTRIC, Office, Bldg. 12, (Albany, N. Y.).

▲ **Dick Corp.**, Rte. 15, Large, Pa., LB **$11,222,222**, (10 bidders), three CYLINDRICAL TOWER DORMITORIES, (two 18 stories and one 21 stories) Fifth Ave., PITTSBURGH, PA. University of Pittsburgh, 5th & Bigleow Sts., Pittsburgh, Pa. Deeter & Ritchey, 3 Gateway Center, Pittsburgh, Pa., archts.

▲ **John McShain, Inc.**, 3501 Sinclair Lane, Baltimore, 13, Md., CA **$9,759,000**, Children's MEDICAL AND SURGICAL CENTER BALTIMORE, MD. Johns Hopkins Hospital, Broadway & Monument St., Baltimore, Md. BA 6/1/61. CD 5/15/61.

▲ **Kirby & McGuire Inc.**, 2518 Greenmount Ave., Baltimore, Zone 18, Md., CA **$3,290,000**, MEDICAL CENTER, BALTIMORE, MD. Lutheran Hospital, 730 Ashburton St., Baltimore, Md. CD 6/7/61, under LB.

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲ **TENNESSEE**—State Hy. Comn., Nashville, Bids opened June 30, BRIDGES,

Tenn.—L & M Constr. Co., 843 Vance Ave., Memphis, Tenn., LB **$829,741**, grading, drainage, constr. seven bridges, 7.572 mi., Proj. No. I-40-1(37)34, Fayette Co.;

Tenn.—Oman Constr. Co., Acklen Park, Nashville, Tenn., LB **$3,592,768**, grading, paving with cement concrete, constr. four bridges, 1.358 mi., Proj. No. I-24-3(19)123, Hamilton Co. CD 6/9/61.

BUILDINGS—LB & CA

▲ **S. S. Jacobs Co.**, 233 Duval St., Jacksonville, Fla., CA Est. **$5,000,000**, SHOPPING CENTER, Hy. 17, WINTER PARK, FLA. R. H. Jacobs, P. O. Box 4159, Jacksonville, Fla.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **O., Elyria**—BA 7/20—City, City Hall, SEWAGE TREATMENT PLANT EXPANSION. $3,100,000. Havens & Emerson, 640 Leader Bldg., Cleveland, Zone 14, engrs. CD 6/9/60.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15, Bids opened 6/27, ROADS,

O.—Odell Constr. Co. and **W. G. Lockhart Constr. Co.**, 805 Prouty Rd., Painesville, O., LB **$4,009,254**, est. $4,456,900, (9 bidders), 4 mi. IR 77 (relocated US Rte. 21) between Everett Rd. and the Ohio Turnpike to incl. interchanges at Wheatley Rd. and existing USR 21, Proj. 350, Summit Co.;

O.—The Horvitz Co., 4375 E. 146th St., Cleveland, O. LB **$7,987,859** est. $8,167,000 (5 bidders) constr. 4.2 mi. Cleveland Outerbelt East (SR 1-IR 271) Pepper Pike Lyndhurst and Mayfield Heights, incl. six bridges, Proj. 341, Cuyahoga Co.

O.—V. N. Holderman & Sons Co., 890 Oakland Park Ave. Columbus, O., LB **$4,234,848** est. $4,593,000 (6 bidders) constr Granville Bypass SR 161 and SR 16, with interchanges at SR 37 and existing SR 16, Proj. 346, Licking Co. CD 6/13/61.

BUILDINGS—LB & CA

▲ **C. A. Tharnstrom & Co.**, 7401 N. St. Louis Ave., Skokie, Ill., CA **$3,500,000**, 5 story, 201 unit MOTEL, parking, Congress Expressway and Canal St. CHICAGO, ILL. Adams Management & Investment Co., c/o H. B. Shuman & I. Spector, 100 N. LaSalle St., Chicago 2, Ill. CD 7/5/61.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† **Texas**—BA About 8/3—U. S. Eng., P.O. Box 1600, Fort Worth, RELOCATION TEXAS AND NEW ORLEANS RAILROAD for Amistad Dam, Val Verde County, Inv. No. UDA-6457. Over $10,000,000. CD 1/25/60.

BUILDINGS—BA

▲ **Mo., St. Louis**—BA 8/18—Anheuser-Busch, Inc., 721 Pestalozzi St., Zone 18, SUPERSTRUCTURE 10 story brick, concrete, steel, etc. STOCKHOUSE. 13 St. between Arsenal and Pestalozzi Sts. $4,000,000. Sverdrup & Parcel & Assocs., Inc., 915 Olive St., St. Louis 1, Mo., archt.-engr. CD 12/29/60.

▲ **Neb., Omaha**—BA 9/7—Postal Dpt., Room 311, Post Office Bldg., Wichita, Kan., build and lease 318,000 sq. ft. POST OFFICE and MAIL HANDLING FACILITY, 26,277 sq. ft. GARAGE and VEHICLE MAINTENANCE. $5,000,000. Plans deposit $88.50. Henningson, Durham & Richardson, 2962 Harney St., archts. (Correction—bid date.) CD 6/27/61.

HEAVY CONSTRUCTION—LB & CA

▲† **Winston Bros. Co., Green Constr. Co., Johnson, Drake & Piper Inc., American Pipe & Constr. Co., Foley Bros.**, 301 Clifton Ave., Minneapolis 3, Minn., LB **$5,458,823**, est. $5,728,661, (6 bidders), SPILLWAY, 550,000 cu. yd. excav., 65,000 cu. yd. embankment, 90,000 cu. yd. concrete, 40,000 cu. yd. riprap and spills, Oahe Dam, ENG-25-066-61-119, Pierre, SOUTH DAKOTA. U. S. Eng., 215 N. 17th St., Omaha, Neb. BA 6/29/61. CD 4/27/61.

▲ **TEXAS**—State Hy. Dpt., Austin, ROADS,

Tex.—Texas Bitulithic Co., P.O. Box 10365, Dallas, Tex., CA **$1,600,908**, grading, strs., conc. pvt., 2.427 mi., Hy. IH 820, I 820-4(49), Tarrant Co.; CA **$1,608,713**, grading, strs, fl. base and conc. pvt., 3.422 mi. Hy Loop 13, U 1095(3), Bexar Co.;

Tex.—R. W. McKinney, Box 190, Nacogdoches, Tex., CA **$636,713**, grading, ext. strs., fl. base and surf., 28 mi. Hy. US 82 & FM 1897, CA 45-4-20, etc., Fannin-Grayson Counties;

Tex.—Trotti & Thompson, Inc., P.O. Box 70 Beumont, Tex., CA **$759,483**, grading, strs., fl. base, conc. pvt and A. C. pvt., 0.384 mi., Hy ST. 73, U 1052 (56), Jefferson Co.;

Tex.—L. H. Lacy Co. & Frank L. King, Jr., P.O. Box 13353, Dallas, Tex, CA **$1,299,118**, conc. pvt, and soil cement base and A. C. pvt., 6.597 mi., Hy IH 20, I 20-6(24), Smith Co.;

Tex.—E. B. Darby & Co., Inc., P.O. Box 467, Pharr, Tex., CA **$1,398,036**, grading, strs., lime base and A. C. pvt., 10.997 mi., Hy US 290, F 236(13), Washington Co.;

Tex.—Gulf Bitulithic Co. & Texas Bitulithic, P.O. Box 1065, Dallas, Tex., CA **$3,113,099**, grading, stm. sew, cement, base and conc. pvt., Hy IH 610, I 610-7(80), Harris Co., Grand total $10,416,070. BA 6/20/61. CD 6/23/61, under LB.

▲ **TEXAS**—State Hy. Dpt., Austin, ROADS,

Tex.—Trotti & Thomson, Inc., P.O. Box 70, Beaumont, Tex., CA **$2,569,465**, fl. base and conc. pvt., 9.285 mi., Hy. IH 10, I 10-8(47), Jefferson Co.;

Tex.—Concho Constr. Co., Inc., T. L. James & Co., Inc., and **Spencer Constr. Co., Inc.**, 5622 Dyer Sts., Dallas, Tex., CA **$3,276,467**, grading, strs., st. sew, base and conc. pvt., 3.347 mi., Hy US 175, U 860(15) UG 860(16), Dallas Co.;

Tex.—R. C. Buckner Constr. Co., Box 609, Jacksonville, Tex., CA **$562,905**, grading, strs., fl. base and 2 crse. surf. treatment, HY. ST. 26, F 642(8), Gregg Co.;

Tex.—Den Word Co., P.O. Box 330, New Braunfels, Tex., CA **$845,945**, grading, strs., base and surf., 1.221 mi., Hy. US 84, E 55 8-30, McLennan Co., BA 6/21/61, CD 6/26/61, under LB.

Tex.—Adams Bros., PO Box 130, Athens, Tex., CA $1,742,144, grading, strs., soil asp. base and 4 grade separation, 7.063 mi., Hy IH 20, I 20-7(11) Jefferson Co. Grand total $8,996,817. CD 5/29/61.

▲ **Sheehan Pipeline Constr. Co.**, National Bank Tulsa Bldg., Tulsa, Okla., CA **$5,067,000**, 428 mi. 4-12 in. GAS-GATHERING SYSTEM, Panhandle, TEXAS. Transwestern Pipeline Co., 618-1st. City National Bank Bldg., Houston, 2, Tex. CD 11/30/59.

McVean & Barlow, Inc., Kermit Hy., Box 151, Odessa, Tex., CA **$856,000**, 47 mi., 8-4 in. natural gas pipeline, between Bluitt Plant and Panhandle, (Texas.).

BUILDINGS—LB & CA

▲ **Behymer Corp.**, 8954 St. Charles Rock Rd., Overland 14, Mo., Owner Builds, **$6,000,000** (3 year program), 1st year $2,000,000, 450 HOMES, Huntington Subdivision adjacent to 12000 Highlife Dr., CREVE COEUR (ST. LOUIS 41 P.O.), MO.

▲ **Delta Engineering Corp.**, 2121 San Felipe Rd., Houston, Tex., CA Est. **$7,500,000**, CEMENT FACTORY, FOREMAN, ARK. City, City Hall, Foreman, Ark. Arkansas Cement Corp., Shannon Bldg., Little Rock, Ark., lessee. CD 6/9/61, under CA, under Arkansas Cement Corp., as owner.

▲† **Centex Co.**, 4606 Greenville St., Dallas, Tex, CA **$8,190,154**, 50 units CAPEHART HOUSING, Offutt Air Force Base, FORT CROOK, NEB. Base Procurement Office, Fort Crook, Neb. BA 4/25/61. CD 4/28/61 under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **Calif., San Diego**—BA 8/2—City, Room 161, Civic Center Bldg., Zone 1, INTERCEPTOR SEWER, Cont. No. 1, sewage collection treatment and disposal system. $5,454,300. Bid date advanced. Plans deposit $25. CD 6/13/61.

▲ **California**—BA 8/9—State Dpt. Water Resources, 1120 N St., Sacramento, 4,333 ft long, 35 ft. diam. DIVERSION TUNNEL, Oroville Dam, involving 210,000 cu. yd. excav., 57,000 cu. yd. concrete for lining, Feather River Proj., Butte Co. $7,500,000. CD 5/6/60.

BUILDINGS—BA

▲ **Calif., Newport Beach**—BA 7/26—Newport Union High School Dist., 1601 16 St., HIGH SCHOOL (8 bldgs.), Jamboree and Ford Sts., Corona Del Mar. $4,270,000. Plans deposit $100. Blurock, Ellerbroek & Assoc., 2515 E. Coast Hy., Corona Del Mar, archts. CD 5/29/61.

BUILDINGS—SLC

Calif., San Francisco—Pacific Maritime Assn., International Longshoreman's & Warehousemen's Union Pension Fund, c/o Richard Ernst, atty., 16 California St., soon lets contract 297 wood frame, stucco ext. CO-OPERATIVE APARTMENTS, Western Addn. $4,500,000. Marquis & Stoller, 737 Beach St., archts. Eric Elsesser, 2037 Hyde St., engr. CD 8/22/60.

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, ROAD,

Guy F. Atkinson Co., 10 W. Orange Ave., South San Francisco, Calif., CA **$7,983,507**, grading, paving 5.4 mi. 4 lane freeway US Hy. 40 between 0.8 mi. west of Emigrant Gap and 3 mi. west of Cisco, incl. 4 bridges, Placer and Nevada Counties. BA 6/21. CA 6/29. CD 6/23/61, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, BRIDGE,

Guy F. Atkinson Co., 10 West Orange Ave., South San Francisco, Calif., CA **$3,240,439**, nine bridges on future route San Diago Freeway between Studebaker Rd. and Cerry Ave. in and near Long Beach, Los Angeles Co. BA 6/8. CD 6/14/61, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, ROAD,

Griffith Co., 1060 S. Broadway, Los Angeles, Calif., CA **$10,987,901**, grading, paving 4.8 mi. eight lane San Diego Freeway, Los Angeles Co. BA 6/15. CD 6/20/61, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 6/29, ROAD,

Winston Bros. Co. & **Green Constr. Co.**, P.O. Box 1218, Arcadia, Calif., LB **$4,857,329** (5 bidders), grading, paving 5.6 mi. 4 lane freeway, US Hy. 60 between Sunnyslope and Orange St. in Riverside, Riverside Co. CD 6/14/61.

▲ **F. E. Young Constr. Co.**, P.O. Box 2872, San Diego 12, Calif., and **Scott Co.**, 400 W. Temple St., Los Angeles, Calif., CA **$9,291,408**, est. $4,000,000, LOWER FEEDER WATER TREATMENT PLANT and 25 m.g. underground RESERVOIR, Yorba Linda, LOS ANGELES, CALIF. Metropolitan Water Dist. of Southern California, 306 W. 3 St., Los Angeles, Calif. BA 6/21. CA 6/29. CD 6/29/61, under LB.

▲† **Paul Hardeman, Inc.**, 10579 Dale Ave., Stanton, Calif., CA **$8,909,581**, est. $10,471,800, LAUNCH COMPLEX No. 2, Naval Missile Facility, Point Argu-

(Continued on page 68)

ORISEAL®
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Introduced one year ago . . .
today recognized as the lifetime curb valve by
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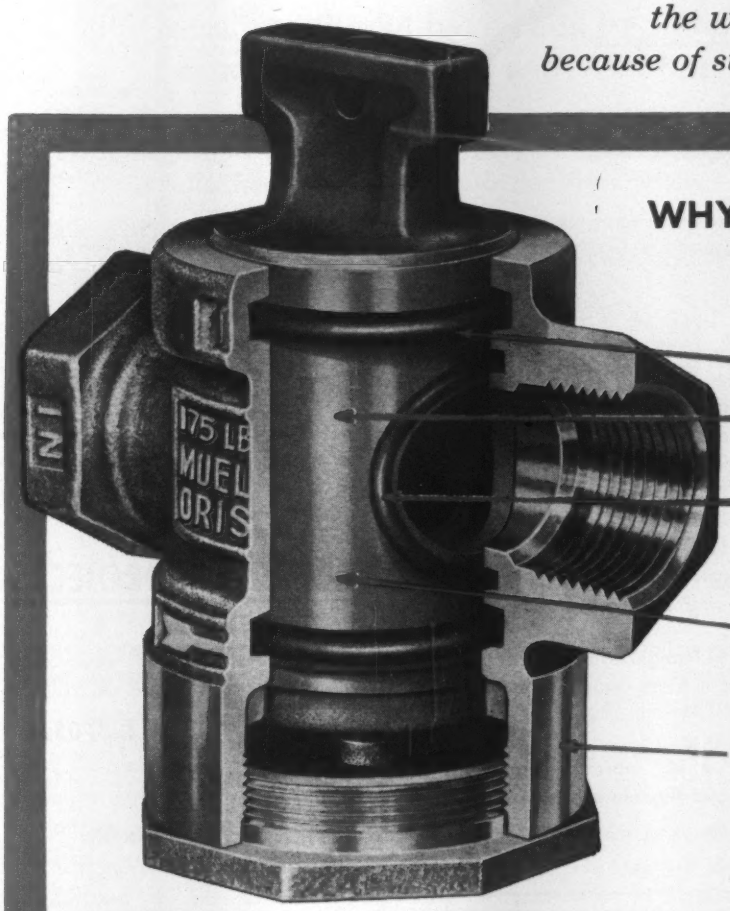
because of superior features!



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Straight, Balanced Pressure Plug—O-rings of equal size at top and bottom eliminate end thrust, contribute to turning ease.

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"Teflon"* coated Plug—prevents "sticking" or "freezing", even after long periods of idleness. "Teflon", an inert material having a very slick surface, eliminates the necessity of periodic lubrication or maintenance.

Strong Cast Brass Body—of extra strength and with heavy-duty check lugs, enables the Oriseal body to withstand all normal operating and installation stresses.

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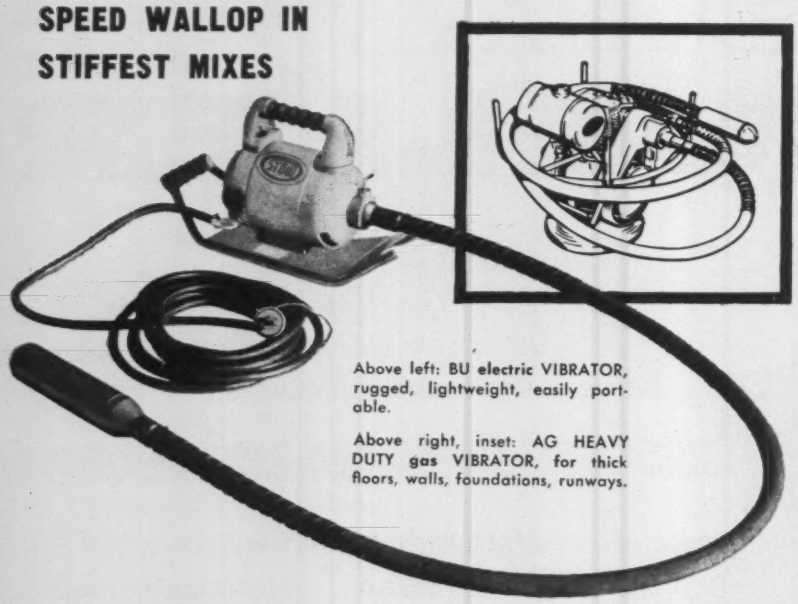

Above left: BU electric VIBRATOR, rugged, lightweight, easily portable.

Above right, inset: AG HEAVY DUTY gas VIBRATOR, for thick floors, walls, foundations, runways.

STOW

With a Stow BU Electric or Gas Vibrator you get the constant, thorough vibration you need to compact stiffest concrete mixes . . . smooth-running performance under roughest conditions.

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COMPANY _____

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STOW MANUFACTURING CO.

Binghamton, New York

(Continued from page 66)

ello, Spec. 36856, POINT MUGU, CALIF. 11th Naval Dist. P. Wks., 1220 Pacific Hy., San Diego 1, Calif. BA 6/26. CD 6/28/61, under LB.

BUILDINGS—LB & CA

▲ **Mark B. Garff, Ryber, Garff and Okland Constr. Companies,** Box 1204, Salt Lake City, Utah, CA est. **$4,000,000,** 6 level, 300 x 480 ft. white stone, glass, brick STUDENT CENTER, PROVO, UTAH. Brigham Young University, Dir. of Plans and Development, 865 North 7th St., Provo, Utah. BA 6/13/61. CA 6/27/61. CD 5/22/61.

▲ **Merco Constr. Engr., Inc.,** 6052 Venice Blvd., Los Angeles, 34, Calif., CA **$4,060,400,** est. $4,200,000, (6 bidders), Chatsworth HIGH SCHOOL, LOS ANGELES, CALIF. Bd. of Educ., 1425 S. San Pedro St., Los Angeles, Calif. Roland H. Crawford, 146½ S. Doheny Drive, Beverly Hills, Calif., archt. BA 6/16/61. CD 5/26/61.

▲ **W. B. Roberts,** 16330 Azalea Ave., Los Gatos, Calif., Owner Builds, **$5,814,000,** 212 units wood frame, masonry air-conditioned garden APARTMENTS, LOS GATOS, CALIF. Marcel Sedletzky, Flanders Dr., P.O. Drawer 4917 Carmel, Calif., archt.

CANADA

BUILDINGS—LB & CA

▲ **V. K. Mason Constr. Ltd.** c/o Balharrie, Helmer & Miron, archts., 77 Metcalfe St., Ottawa, Ont., LB **$3,253,954,** two RESIDENCES, lecture hall, arts bldg., eating center addn., rein.-conc. fdn. OTTAWA, ONT. Carleton University, 268 1st Ave., Ottawa, Ont. BA 6/22/61. CD 6/5/61.

▲ **Milgate Development Ltd.,** 3989 Bathurst St., Toronto, Ont., Owner builds **$7,000,000,** five 7 story APARTMENTS, HOTEL, Lake Promenade, TORONTO, ONT. George A. Jarosz, 34 Kerswell Dr., Toronto, Ont., archt. A. Tobias & Assocs., Ltd., 194 Wilson Ave., Toronto, Ont., consult. engr.

▲ **Peter Leitch Constr. Ltd.,** 170 Scott St., Winnipeg, Man., CA **$4,392,000,** 332 bed HOSPITAL for Sisters of Charity, SASKATOON, SASK. St. Paul's Hospital Bd. Governors, Saskatoon, Sask. BA 6/1/61. CA 6/23/61, under LB.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **Tokyo Electric Express Railway, Ltd.,** Tokyo, Japan and **Hilton Hotels International,** Waldorf Astoria, New York 22, N. Y., U. S. A., Owner Builds, **$12,500,000,** 14 story (3 below ground level) Hilton Tokyo HOTEL, TOKYO, JAPAN. Gonkura M. Kume, Tokyo, Japan, archt. CD 2/7/56.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **SAILAV (En Form.),** Buenos Aires, Argentina, CA **$23,750,000** construct 1.2 mi. long TUNNEL under River Parana carrying two way traffic and connecting Santa Fe City with Parana City, Santa Fe Prov., Santa Fe City, ARGENTINA. Govt. Santa Fe, Santa Fe City, Santa Fe, Argentina. Hoichteif, Essen, Germany, and Vianini Spa, Rome, Italy, engrs. CA 6/26. CD 3/5/58, under LB.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Mich., Flint**—Bd. Water Comrs., City Hall, WATER SUPPLY INTAKE and WATER SUPPLY LINES, from Flint to Lake Huron. $50,000,000. Consoer, Townsend Assocs., 360 East Grand Ave., Chicago 11, Ill., consult. engrs.

SEWERS, WASTE DISPOSAL

▲ **Mo., St. Joseph**—City, City Hall, voted $3,360,000 bonds June 20. MAIN SEWERS and EXTENSIONS. Black & Veatch, 1500 Meadow Lake Parkway and P.O. Box 8405, Kansas City 14. Mo., consult. engrs. CD 5/11/61.

STREETS AND ROADS

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, ROADS,

Kings Co.—grading, paving 7 mi. freeway State Sign Rte. 198 between 0.2 mi. west of main gate of Lemoore Naval Air Station and 0.1 mi. east jct. with State Sign Rte. 41 near Lemoore. $3,000,000. Bids this summer.

AIRPORTS

▲ **B. C., Vancouver**—Govt. of Canada, Parliament Bldgs., Ottawa, Ont., JET AIR TERMINAL, hangars and runways. $12,000,000 to $18,000,000.

UNCLASSIFIED

▲ **O., Youngstown**—Youngstown Steel Bowl Foundation, c/o Michael J. Baumstark, 230 North Roanoke, S., plans by Frank Russo, 723 Marlin St., STADIUM, Smoky Hollow District. $5,000,000.

PUBLIC BUILDINGS

▲+ **Calif., Camp Pendleton**—P. Wks. Office, 11th Naval Dist., 1220 Pacific Hy., San Diego, plans by Welton, Becket & Assoc., archts.-engrs. 10000 Santa Monica Blvd., Los Angeles 25, Calif., ADMINISTRATION BLDG. BILLETING, ARMORIES, STORAGE BLDGS., FIRING RANGES, ROADS, UTILITIES, COMMUNICATIONS, Marine Recruit Corps Weapons Station, U. S. Hy. 101, Stuart Mesa. $10,000,000. (No. appro.)

(Continued on page 70)

Special report to users of Cat D6 and D7 track parts

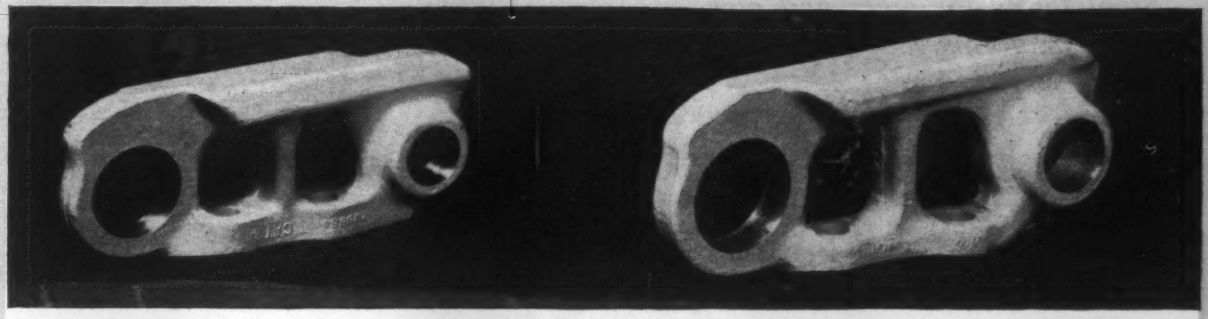
CAT CATERPILLAR

Parts you can trust
...cost less per hour

Up to 25% Longer Link Life at No Increase in Cost

New track links have rails hardened deeper than any other brand . . . hardness with file-like, wear-resistant qualities

You can't "see" metallurgy and heat treatment in track links. But you'll definitely see the *results* in the extra life you get from the *new* Cat D6 and D7 track links. These superior links will outlast all other brands yet the suggested price is no higher than before.



D6, 955 AND 561 LINKS

- "Hi-Electro" hardened rails give outstanding wear life.
- Rail wear cases are twice as deep as other brands.
- Closer bore tolerances retain pins and bushings better.
- Full 1¼" top rail surface to pin boss clearance allows more wear before roller flange contact.

D7, 977 AND 572 LINKS

- 12% thicker rails eliminate peening, rebuilding distortion.
- 32% thicker struts and more steel in critical areas increase over-all strength, resist cracking.
- File-hard "Hi-Electro" hardened rails withstand abrasive wear.
- Uniform, wear-resistant rail cases deeper than other makes.

These new track links are made from special steel, carefully pretested *before* manufacture. They're forged, machined and heat treated to develop maximum strength and toughness. A non-peenable wear barrier is induced *deeply* into rail top and sides by exclusive "Hi-Electro" hardening. This exacting heat treatment permits maximum, file-like wear resistance without brittleness.

Try the new links . . . and the many other *special-purpose* tractor undercarriage parts, all designed and built to keep your cost-per-hour to a minimum. Cat undercarriage specialists can help you select right combinations and give you money-saving recommendations tailored to your particular needs. It's all a part of your Dealer's Custom Track Service . . . the practical approach to lowering undercarriage costs by extending part life and machine availability through proper parts selection and parts care.

Etched rail cross-section shows deep, uniform wear case found on top and sides of new links.

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Peoria, Illinois, U. S. A.

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LOCATION — PEE DEE RIVER CROSSING, Florence, S.C.

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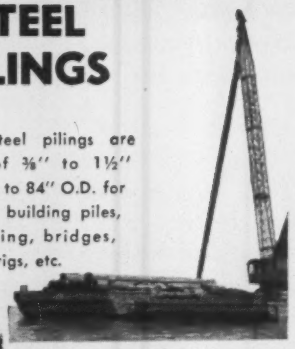

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• Large OD Steel pipe

561 S. PRINCE STREET LANCASTER, PA.

(Continued from page 68)

▲ **Calif., Santa Ana**—Bd. Supervs. Orange Co., Court House, plans by Wm. Faulkner, Suite 425, Spurgeon Bldg., Santa Ana, Calif., 9 story COUNTY JAIL, Broadway between 6 and 8 Sts. **$3,000,000.**

▲ **Fla., Miami**—Dade County Bd. P. Instruction, 1410 NE 2nd Ave., plans by Pancoast, Ferendino, Skeels & Burnham, 2575 S. Bayshore Dr., Dade County JUNIOR COLLEGE, NW section, **$4,000,000.** N. J. Dignum & Assocs., 260 Palmero Ave., Coral Gables, Fla. consult. engrs. CD 5/23/61.

▲ **Ill., East St. Louis**—East St. Louis School Dist. No. 189, 240 N. 6th St., **$8,154,000,** bond election July 15, SCHOOLS, SCHOOL ADDNS., CD 4/14/60.

▲† **Mass., Harvard**—General Services Admin., 19 and F Sts. N.W., Wash., D. C., OCDM OPERATIONS CENTER, near here. **$3,000,000.** (No appro.).

▲† **N. Y., New York**—General Services Admin., 250 Hudson St., New York 13, N. Y., FEDERAL OFFICE IMPRVTS., Vesey St. **$4,040,000.**

▲ **Tex., Austin**—University of Texas, Bd. Regents, Main Admin. Bldg., plans by Jessen, Jessen, Millhouse & Greeyen, 2816 Hemphill Park, Austin; and Phelps & DeWees & Simmons, A & E Bldg., Box 2187, Laurel Heights Station, San Antonio, ENGINEERING-SCIENCE BLDG., **$4,000,000.** Bids March or April 1962. CD 2/2/60.

COMMERCIAL BUILDINGS

▲ **Calif., San Francisco**—College of Physicians & Surgeons, 344 14 St., plans by Skidmore, Owings & Merrill, 1 Bush St., San Francisco, Calif., DENTAL SCHOOL at Presbyterian Medical Center. **$5,000,000.** To go ahead 1962.

▲ **Conn., Milford**—Sol G. Atlas, Cross County Center, Yonkers, N. Y., plans by Meyer & Kasindorf, 10 South Middle Neck Road, Great Neck, N. Y., 300,000 sq. ft. 15 story, steel Connecticut Post Plaza OFFICE, adpacent to Connecticut Tpk. at Connecticut Post Center, **$3,000,000.**

▲ **N. J., Fort Lee**—Hot Shoppes, Inc., 5165 River Rd., Bethesda, Md., 363 unit MOTOR HOTEL. **$3,500,000.**

▲ **N. Y., Garden City**—Adelphi College, South Ave., plans by Neutra & Alexander, 2379 Glendale St., Los Angeles, Calif., Institute of Creative and Performing Arts, CULTURAL CENTER. **$10,000,000.**

▲ **N. Y., New York**—St. Luke's Hospital, 421 W. 113 St., New York 25, N. Y., plans by Kiff, Colean, Voss, Souder, Franklin & McConnell, (Office of York & Sawyer) 230 Park Ave., New York 17, N. Y., 8 story HOSPITAL ADDN 10 story Women's Annex, **$7,000,000.** Meyer, Strong & Jones, 230 Park Ave., New York 17, N. Y., mech. engrs. Edwards & Hjorth, 67 W. 44 St., New York 36, N. Y., struct. engrs. Bids Fall 1961. CD 10/7/60.

▲ **O., Columbus**—Turkey Run, Inc., c/o Dr. Robert E. S. Young, 2549 Tremont Rd., plans by Brown, Brubaker & Brandt, 1473 W. 5th Ave., 707 unit APARTMENTS, southwest of Olentangy River Rd. and Marburn Rd. **$8,000,000 to $9,000,000.**

▲ **R. I., Providence**—Miriam Hospital, 164 Summit Ave., plans by Joseph Blumenkranz, 551 5th Ave., New York City, N. Y., HOSPITAL EXPANSION, **$5,000,000.** Bids Feb. 1962. CD 5/22/59.

▲ **Tex., Wichita Falls**—Downtown Wichita Falls Park and Shop, c/o Charles N. Prothro, City National Bank Bldg., SHOPPING CENTER, interior mall, area drainage and hard-paved parking center, earthwork, **$4,260,000.**

INDUSTRIAL BUILDINGS

▲ **Minn., Plymouth (Minneapolis P.O.)**—Gold Bond Stamp Co., 1629 Hennepin Ave., Minneapolis, 100,000 sq. ft. DISTRIBUTION CENTER, WAREHOUSE and OFFICE, Hy. 55 and County Rd. **$3,000,000.** Constr. 1961.

▲ **N. J., Mahwah**—Fidelity Engineering Co., 568 Winters Ave., Paramus, plans by Francis D. Lethbridge, 1300 Connecticut Ave. N.W., Wash., D.C., INDUSTRIAL PARK. **$6,000,000.**

▲ **Tex., Baytown**—Humble Oil & Refining Co., 1216 Main St., Houston, CHEMICAL PLANT, for making basic alcohols and other oxo chemicals, **$6,000,000.** Bids 1961.

▲ **Tex., Pasadena**—Hydrocarbon Research, Inc., 115 Broadway, New York, N. Y., oxygen and nitrogen PLANT, **$6,250,000.**

AMERICANS ABROAD

▲ **Western Nigeria, Ibadan**—Amkor Corp., 444 5 Ave., New York 18, N. Y., U.S.A., and Western Nigeria Development Corp., c/o Govt. Western Nigeria, Ibadan, PREMIER BREWERIES, brewery near here. **$3,500,000** incl. equipment.

FOREIGN

▲ **Israel, Beersheba**—Mifalei Yam Hamelah B.M. (Dead Sea Works Ltd.), Beersheba, PLANT for producing potash and bromine from Dead Sea brine and bromine chemicals and magnesite PLANT. **$72,000,000.** World Bank loan-$25,000,000.

▲ **Japan**—Self Governing Admin. (Jichicho) or Ministry of Constr., Tokyo, AIRPORT, Nashigahara Area. **$1,100,000;** CABLEWAY at Mitsutoge Observatory and Lake Shojin. **$5,000,000 each.**

▲ **Japan**—Self Governing Admin. (Jichicho) or Ministry of Constr., Tokyo, two HOTELS at Lake Kawaguchi. **$3,400,000;** GOLF COURSE and SKI RESORT at foot of Mt. Fuji. **$8,300,000;** SPORTS CENTER near Fujiyoshida. **$1,300,000.**

▲ **Pakistan**—Central Development Working Party, Dacca, East Pakistan, four JUTE MILLS. **$3,500,000** each.

▲ **Saudi Arabia**—Ministry of Commerce, Riyadh, GRAIN SILOS, Jidda and Dammam. **$6,200,000.**

(Proposal Advertisements see pp. 86 to 90)

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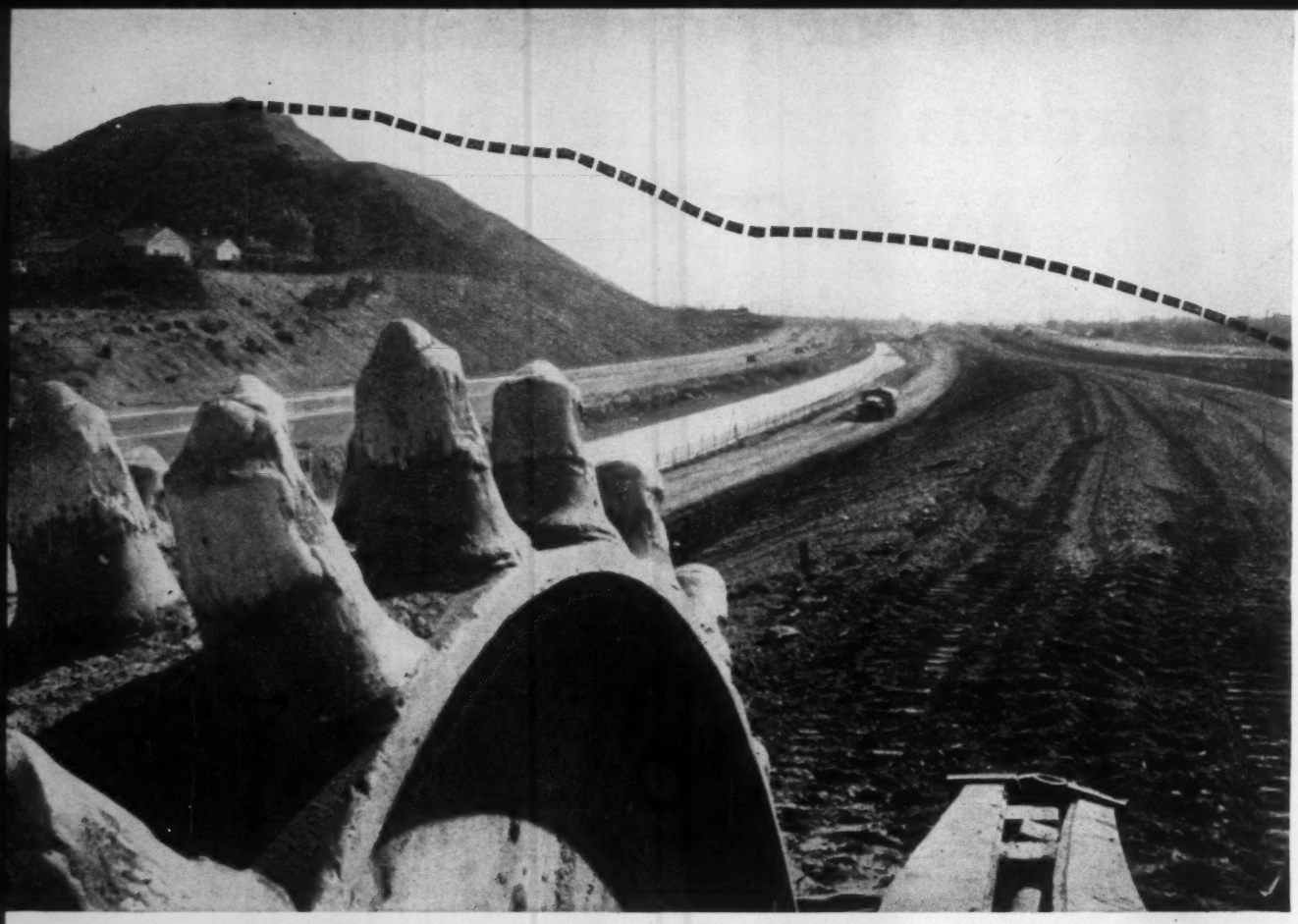
Mobil® Construction Project Study....

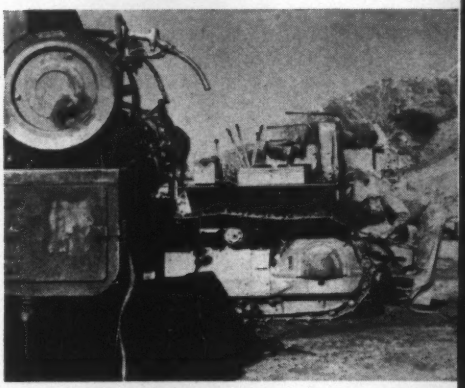


Dotted line represents the mountain profile before UPK removed over one million cubic yards of earth for the relocation of Glen Oaks Boulevard and construction of Freeway section. For this cut-and-haul operation, UPK used DW-20 Scrapers as well as D-8 and D-9 Caterpillars pushing onto a belt loader. Euclid and 10 wheel bottom dump jobs were used for the haul. Note drainage channel between rough-graded Freeway (Right) and completed Glen Oaks Boulevard (Left). (Below, left) 227,000 tons of material for the 8″ sub-base and 2″ untreated base were obtained from an alluvial deposit uncovered at the base of mountain cut. A portable crusher crushed rock to 1½″ and separated sand. (Below, right) 147,000 tons of selected base materials were obtained from nearby foothill containing a massive outcrop of decomposed granite. Dozers ripped rock from crown of hill, bladed it over the side, and fed it into another portable crusher for reduction to specification size, 2½″ maximum to fines.

Knowing how one contractor meets the demands of time, efficiency, profit, may help you in your next job.

UPK operations are highly mechanized . . . use specialized equipment. A Gurries Road Builder is employed to automatically grade base to correct depth and windrow 4″ base prior to addition of specified quantity of bulk cement.

A Pettibone Wood Stabilization Mixer then moves along the windrow, automatically adding water and mixing the cement with base material. Then the mixture is graded, rolled and treated with asphalt. Then 9 inches of concrete is placed using pavers.



A large percentage of UPK equipment repair is done in the field by the day maintenance crew. Preventive maintenance and daily lubrication of all heavy equipment is performed by a second crew that comes on duty at 2:30 PM and works until finished.

How UPK builds 4.067 mile freeway section through center of Burbank, California

Ukropina, Polich, Kral and John R. Ukropina co-ordinate million yard cut-and-haul operation with on-site manufacture of all road base materials.

In 1959, UPK won the $8,340,000 bid to construct a 4.067 mile section of the Golden State Freeway that bisects thickly populated Burbank. In addition to Freeway, bridges, and ramps, the contract called for construction of a 14′ by 30′ concrete flood-water drainage channel parallel to the Freeway and the relocation of 10,000 feet of Glen Oaks Boulevard, Burbank's main traffic artery.

Blocking the direct course of the Freeway to the north was a mountain foothill which extended a quarter-mile into the right-of-way. Over 1,000,000 cu. yds. of earth was removed and hauled as much as two miles to the southern end of the Freeway where it was used as fill. The mountain cut was made wide enough to permit relocation of section of Glen Oaks Boulevard. Manufacture of base materials, cutting and hauling had to be carefully co-ordinated to allow continuous traffic flow on Glen Oaks Boulevard.

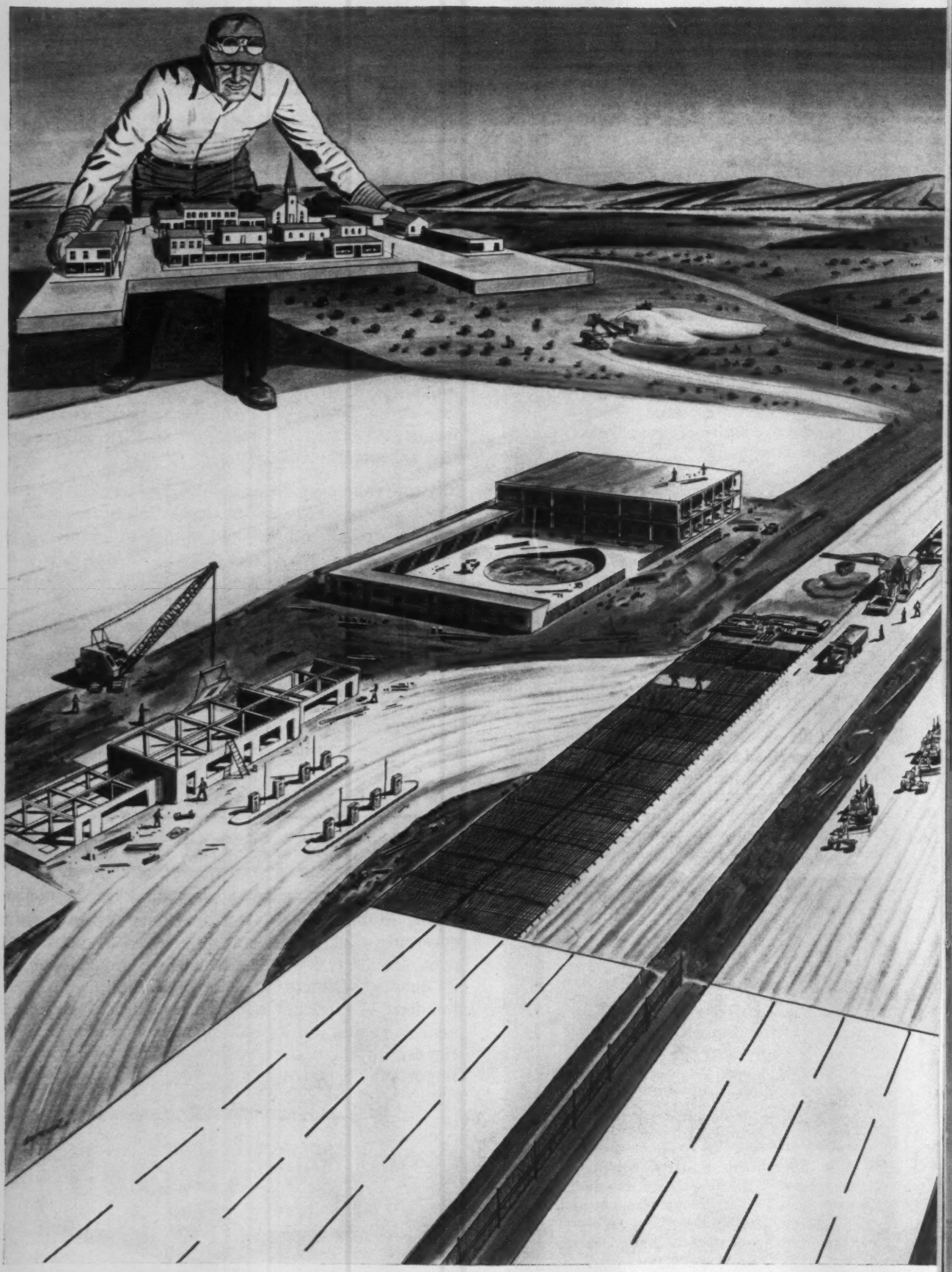
Mobil was the sole supplier of fuels and lubricants. Mobil Engineers assisted UPK in arranging efficient fuel and lubricant storage-and-handling facilities on the site.

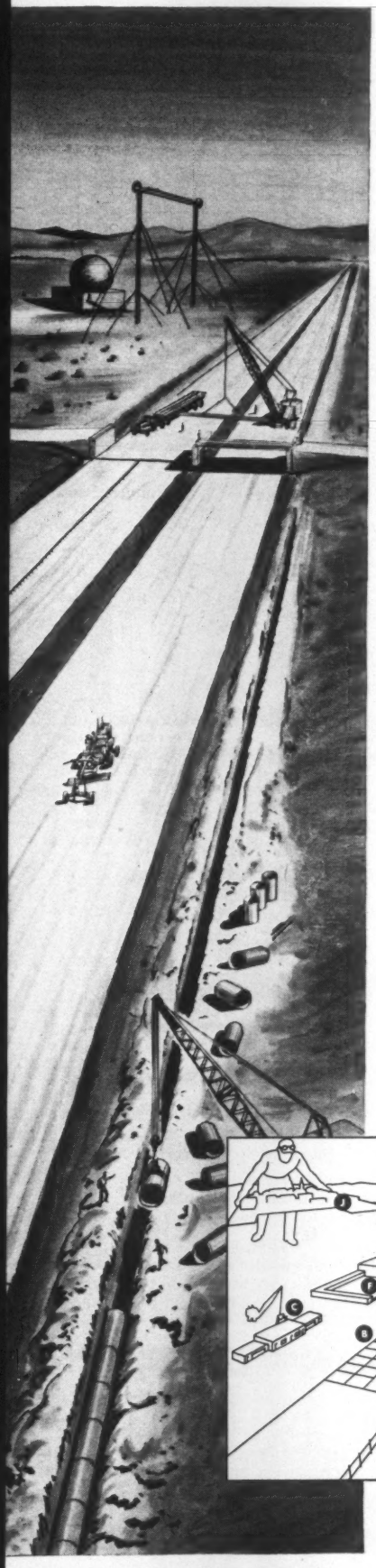
What you can expect from Mobil on your job

Mobil can help you meet the demands of time, efficiency and profit. Mobil does this by providing expert assistance in every phase of your operation affected by petroleum products. Mobil gives you the benefit of 1) engineering service, 2) quality products, 3) close relationship with equipment builders, 4) lubricant and application analysis and 5) convenient location of its bulk plants for prompt delivery. For further information about how we can help you in these 5 important areas, write to us.

Mobil

MOBIL OIL COMPANY, 150 East 42nd Street, New York 17, N. Y.





New Highways help fill up America's wide open spaces

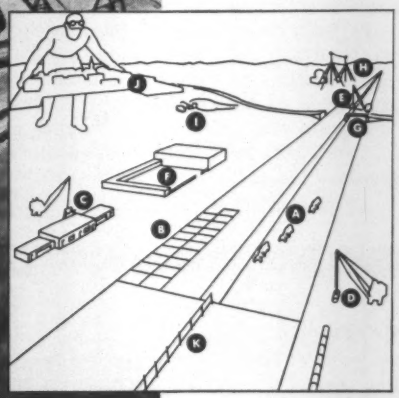
New highways not only connect established cities, they also create new towns and villages along their routes. As service areas and motels spring up to serve the traveler, new settlements gradually grow up around them.

CF&I—a nationwide company—makes a wide range of steel products to help build the roads and service areas that, in turn, help build a better America. This illustration shows the many roles these products play in the creation of one such roadside community.

More and more contractors now realize that no company is better suited to serve this country's growing needs than an American company like CF&I. Top quality steel products and expert on-the-job technical assistance are two of the meanings inherent in CF&I's corporate image. For complete details on these and other steel products, consult your nearby CF&I sales office or write for Catalog G-104.

8267

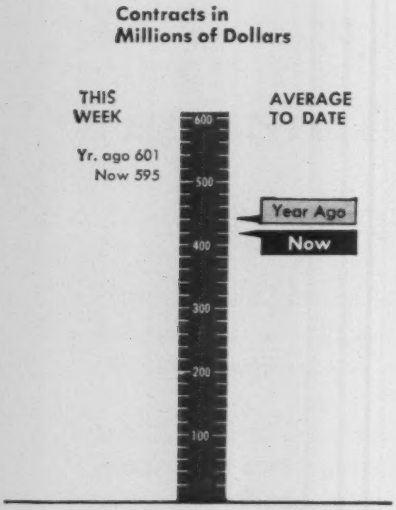
THE COLORADO FUEL AND IRON CORPORATION
Denver • Oakland • New York
Sales Offices in Key Cities



(A) CF&I Cutting Edges for road scraping and grading • CF&I Welded Wire Fabric for reinforcement of **(B)** concrete highways, **(C)** tilt-up sections and **(D)** concrete pipe • **(E)** CF&I-Wickwire Wire Rope and Slings for cranes • **(F)** CF&I-Realock Chain Link Fence for property protection • **(G)** CF&I Prestressed Strand and Wire for precast concrete bridge girders • **(H)** CF&I Galvanized Strand for guying radio towers • **(I)** CF&I Industrial Screens for sizing sand and aggregate • **(J)** CF&I Wire Products for farms and homes • **(K)** New type medium barrier consisting of Realock Chain Link Fence and Wickwire Rope Safety lines prevents out-of-control cars from hurdling divider into oncoming traffic, and also prevents them from bouncing back into their own lane.

Construction Scoreboard

This Week...



AMOUNT OF CONTRACTS LET

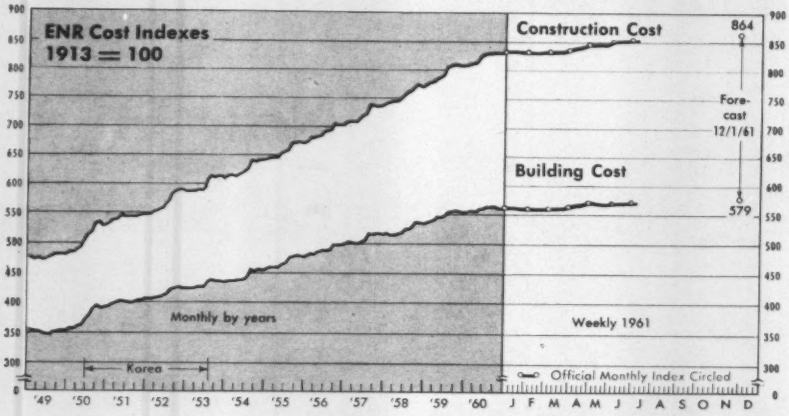
Contracts Awarded In 50 States By Type	This Week millions	Cum. 28 wks 1961	Chge '60-'61 %
All Heavy Construction	$594.6	$11,903.7	− 3
By Ownership			
PRIVATE	185.7	5,824.6	−10
PUBLIC	408.9	6,079.1	+ 5
State & Municipal	312.2	4,574.4	+ 5
Federal	96.7	1,504.7	+ 4
By Type of Work			
PUBLIC			
Waterworks	15.0	212.1	−20
Sewerage	16.4	395.8	+22
Bridges*	53.6	346.7	−21
Highways	123.2	1,999.3	+13
Earthwork, Dams & Waterways	28.8	504.6	+ 9
Buildings:			
Excl. Housing	105.0	1,466.0	+ 8
Housing	28.4	443.0	+30
Unclassified	38.8	711.9	− 6
PRIVATE			
Buildings:			
Mass Housing	92.9	2,585.9	−17
Commercial	61.1	1,415.4	+ 5
Industrial	21.9	1,584.5	+ 9
Unclassified	9.5	238.5	−56

*Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of July 6 millions	Cum. 27 wks 1961	Chge '60-'61 %
Corporate Securities	$ 58.5	$1,957.5	+22
State and Municipal:			
All Except Housing	163.0	3,706.3	+ 3
Housing	0	31.3	−83
Federal Loans	3.3	170.0	+115
Federal Aid	0	0	−100
Total Nonfederal	$224.7	$5,865.1	−28
Federal Appropriations:			
Projects in U. S.	0	1.0	−99
Outside U. S.	0	0	−100
Total New Capital	$224.7	$5,866.1	−30


ENR Cost Indexes 1913 = 100
Construction Cost
864
Fore-cast 12/1/61
Building Cost
579
Monthly by years
Weekly 1961
Korea
Official Monthly Index Circled
'49 '50 '51 '52 '53 '54 '55 '56 '57 '58 '59 '60
J F M A M J J A S O N D

ENR INDEXES (1913 = 100), 20-cities' average	Week of July 6 1961	% Change from June 8 1961	% Change from July 7 1960
Construction Cost	853.64	+0.2	+3.0
Building Cost	571.73	+0.3	+1.9

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

Latest Month . . .

ENR COST INDEXES IN 22 CITIES, 1913 = 100

City	Construction Cost July 1961	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost July 1961	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	658.22	0	+0.8	511.77	0	+2.0
Baltimore	755.91	0	+0.2	562.50	0	+0.1
Birmingham	679.81	0	+3.9	532.82	0	+2.1
Boston	869.59	+0.3	+4.2	593.83	+0.9	+6.4
Chicago	949.46	+0.1	+3.3	596.90	+0.1	+0.5
Cincinnati	867.46	+2.7	+2.8	556.31	+0.8	+1.3
Cleveland	976.12	0	+3.3	573.53	0	+2.1
Dallas	640.32	0	+0.2	530.30	0	+2.1
Denver	779.05	0	+2.9	556.94	+0.6	+0.8
Detroit	984.14	0	+1.9	614.41	0	+1.1
Kansas City	837.88	0	+1.8	561.98	0	+0.03
Los Angeles	942.03	0	+8.5	573.91	+0.7	+1.8
Minneapolis	912.84	0	+2.5	586.65	0	+1.8
New Orleans	668.35	+1.0	+4.2	515.34	+0.4	+1.2
New York	1,080.03	+2.0	+3.7	672.37	+0.6	+3.3
Philadelphia	848.31	0	+2.2	598.28	+0.6	+2.6
Pittsburgh	895.14	+1.1	+1.1	628.12	+0.4	+1.7
St. Louis	919.78	0	+2.3	584.98	0	+0.5
San Francisco	921.34	0	+4.1	565.96	0	+2.2
Seattle	887.25	0	+3.5	515.35	0	+2.3
U. S.—20 Cities' avg.	853.64	+0.4	+2.9	571.66	+0.3	+1.8
Montreal	640.99	0	−1.4	456.68	0	−2.0
Toronto	691.17	0	−0.5	493.30	0	−0.3

CONTRACTS AWARDED

	1961 June (millions)	1961 6-Mos. (millions)	Percent Change from 1960 June	Percent Change from 1960 6-Mos.
Total U. S. (ENR reported)	$2,392	$10,930	−17	− 2
Private	1,115	5,480	−31	− 7
Public	1,277	5,450	−0.1	+ 4
State and Municipal	946	4,152	+ 6	+ 6
Federal	331	1,298	−14	+0.4
ENR Volume Index, 1913 = 100	634	564	−19	− 2

NEW CONTRUCTION CAPITAL

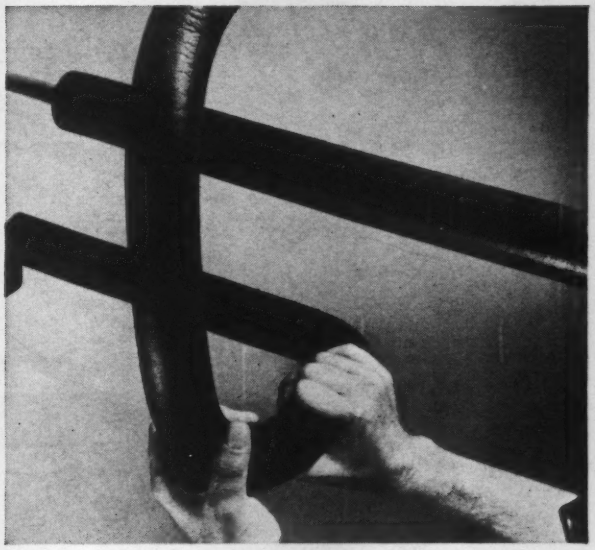
Total U. S.	1,443	5,671	− 3	−31
State and Municipal Bond Sales	970	3,605	− 5	− 3
Corporate Security Sales	401	1,899	− 7	+24
Federal Loans, Aid (nonfederal work)	72	166	+564	−94
Federal Appropriations,* (federal work)	0	1	−100	−99

* Includes funds for outside U. S.

NEW IDEAS IN INSULATION
From GUSTIN-BACON, Pioneer Glass Fiber Manufacturer

FIRST IN THE INDUSTRY!

The finest glass fiber duct liners for acoustical and thermal treatment of air conditioning and heating duct systems —Ultralite and Ultrafine®—now carry a continuous imprint showing type of coating and density for easy on-the-job inspection. No extra cost! Ask for more information.



NEW G-B PIPE INSULATION

Newest addition to G-B's pipe covering line is G-B Ultra*Foam, the flexible foamed plastic insulation material that eliminates moisture condensation. Installs fast . . . provides outstanding thermal protection . . . slips over or snaps on pipe with minimum wastage or damage. Ask for G-B Ultra*Foam brochure.

NEW "PREFAB" GLASS FIBER DUCT

G-B Duct cuts installation time in half in residential and commercial heating and air conditioning systems. Molded in 6′ ready-to-use sections, all-glass-fiber G-B Duct is a thermally efficient air handling system and a sound trap all in one. Encased in a water-tight vapor barrier sleeve, G-B Duct prevents condensation. Ask for G-B Duct brochure.

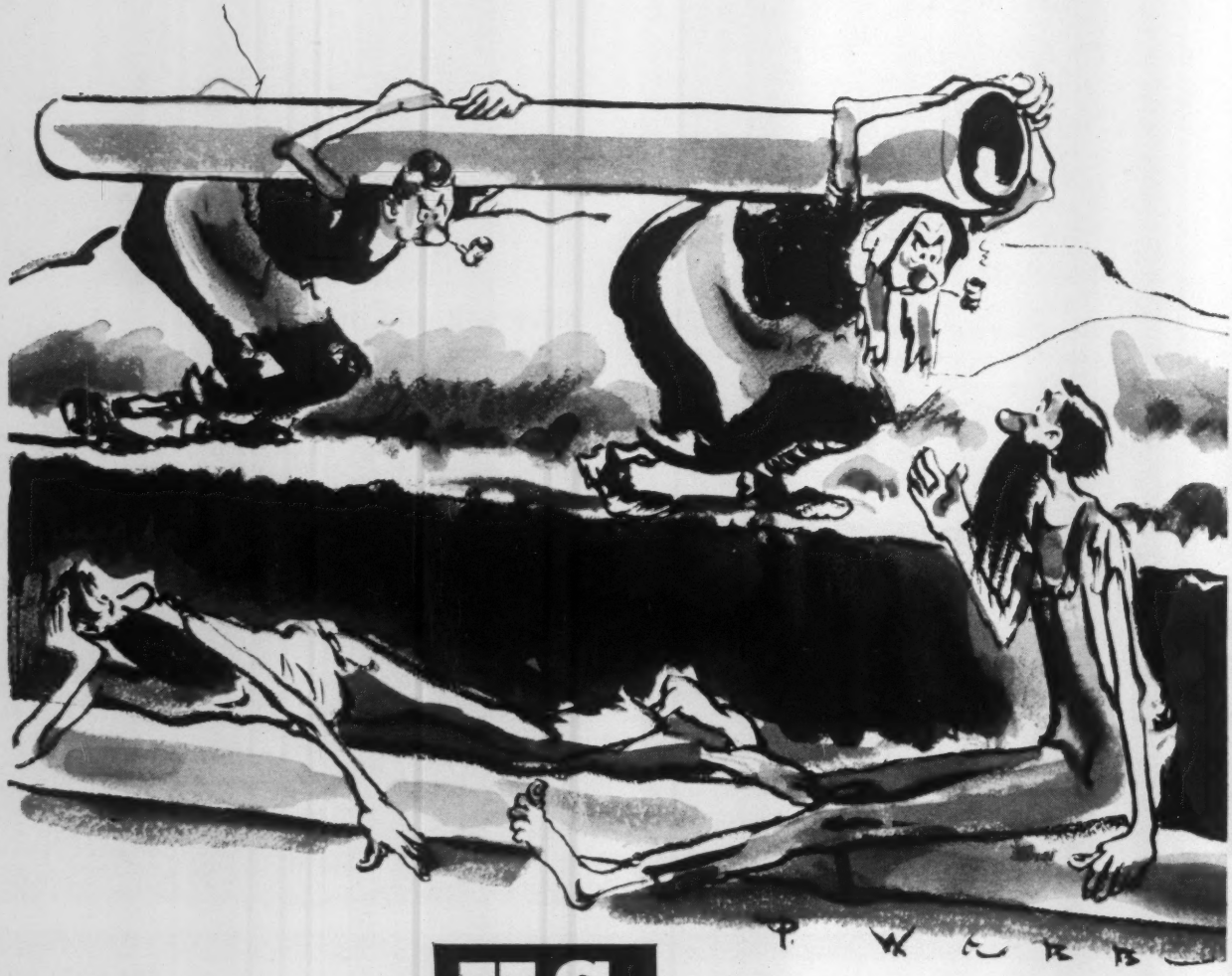
write today for complete information

GUSTIN-BACON *Manufacturing Company* GUSTIN gb BACON

226 W. 10th St., Kansas City, Mo.

Thermal and acoustical glass fiber insulations . . . Molded glass fiber pipe insulation . . . Couplings and fittings for plain and grooved end pipe

"Could you fetch it
a little quicker Gran'maw
Tyton lays mighty fast y' know"



U.S. cast iron PIPE FOR WATER, SEWERAGE AND

stays ahead of the job

No need for your ditcher to dally . . . . .

Tyton Joint® pipe keeps pace . . . stays right with your laying crew. Even in rain or wet trench. "Tyton" is so simple, so easy to handle. Only one accessory needed—a rubber gasket. No bell holes, nuts, bolts or caulking equipment.

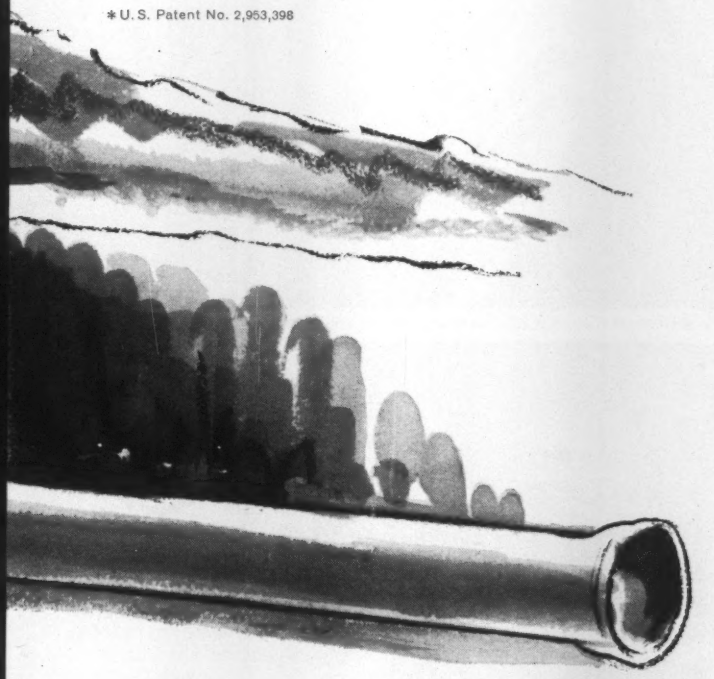
"Tyton" goes in fast . . . cleans up fast. And **you** get the benefit—lower costs, more lengths laid per man.

Get the full, money-saving story today. Call or write:

U. S. PIPE AND FOUNDRY COMPANY
General Office: Birmingham 2, Alabama

A Wholly Integrated Producer from Mines and Blast Furnaces to Finished Pipe.

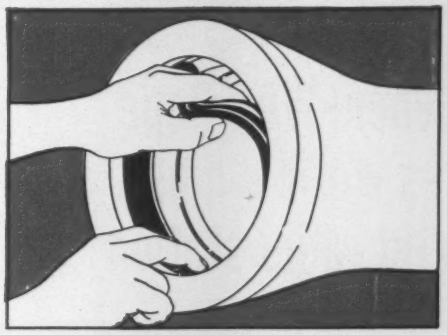
*U. S. Patent No. 2,953,398



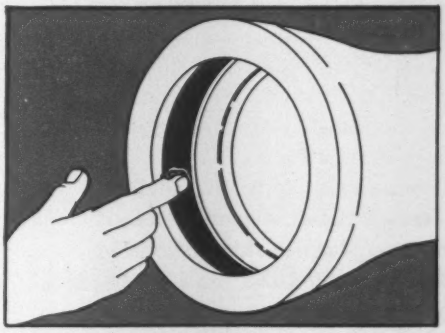
INDUSTRIAL SERVICE ® CAST IRON

TYTON®

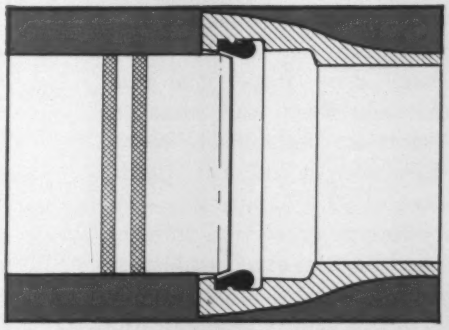
ONLY FOUR SIMPLE ACTIONS



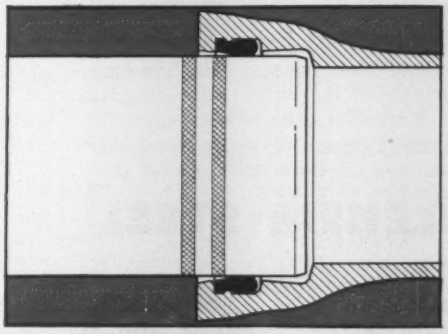
Insert gasket with groove over bead in gasket seat . . . a simple hand operation.



Wipe film of Tyton Joint® lubricant over inside of gasket. Your receiving pipe is ready.



Insert plain end of entering pipe until it touches gasket. Note two painted stripes on end.



Push entering pipe until the first painted stripe disappears and the second stripe is approximately flush with bell face. The joint is sealed . . . bottle-tight, permanently! The job's done . . . . fast, efficiently, economically. Could anything be simpler?

Bethlehem Wire Rope serves world's most powerful radio station

On a remote Maine peninsula a huge antenna web forms the heart of the world's most powerful radio station. It is hung from 26 steel towers which range in height from 700 to 1000 ft. Bethlehem furnished 124,000 ft of $2\frac{3}{4}$-in. diameter prestretched, bethanized (electrolytically zinc-coated) wire rope for a balancing system of 36 counterweights, each weighing 200 tons. The rope raises, lowers, and holds the antenna taut despite fluctuations in temperature, ice loads, and high winds.

A key communications center for the U. S. Navy, this very low frequency transmitter can make instantaneous contact with both surface and undersea craft thousands of miles away.

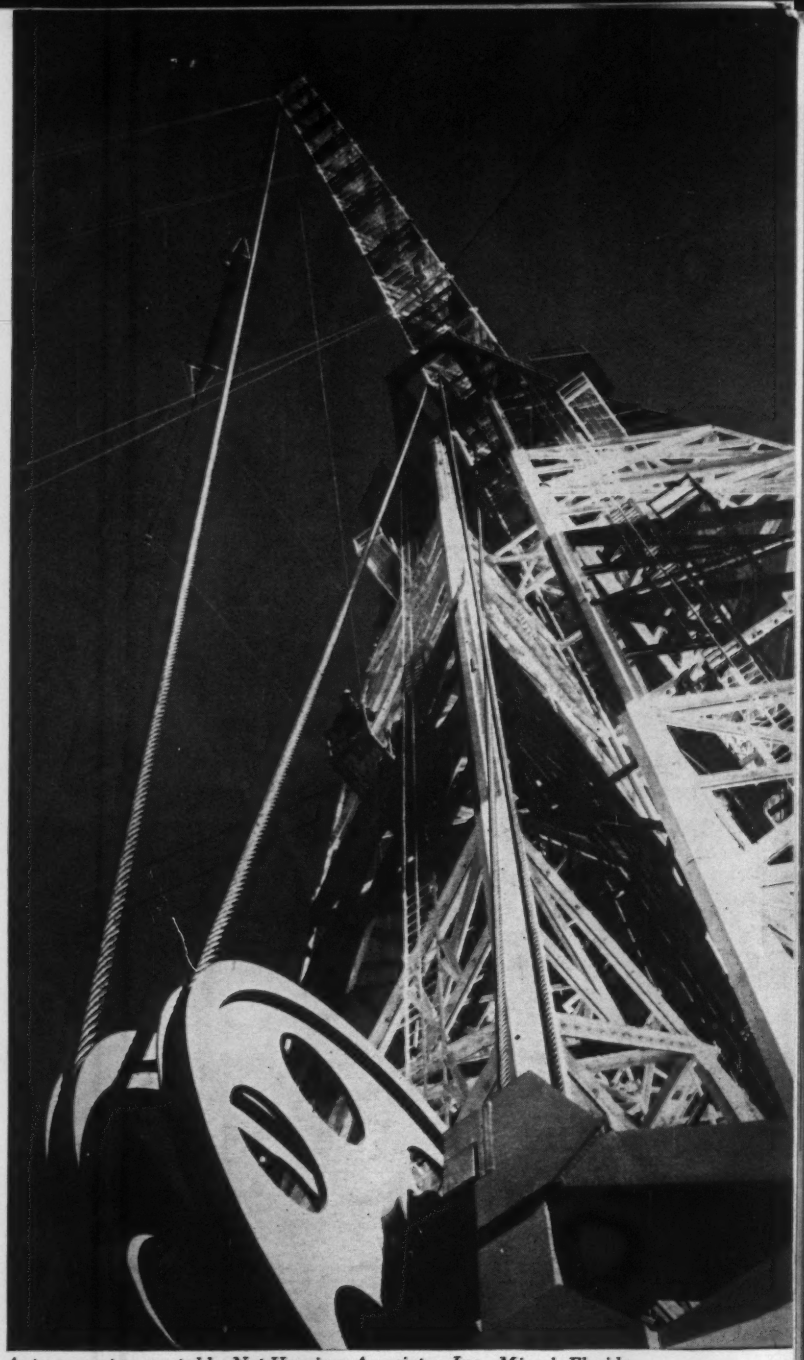
Bethlehem Wire Rope has great strength and durability. And when the individual wires are bethanized—coated electrolytically with a uniform, tightly bonded jacket of 99.9% pure zinc—the rope offers effective protection from atmospheric corrosion. Its excellent fatigue-resisting properties are important on installations of this type, where vibration is a constant problem.

If you would like full information about Bethlehem Wire Rope, simply get in touch with the nearest Bethlehem sales office.

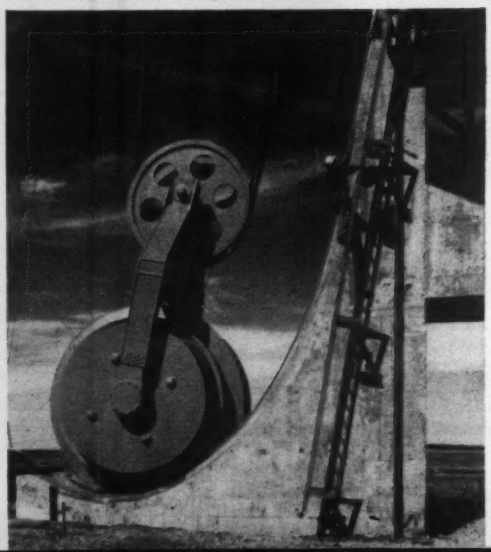
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

There's a distributor of Bethlehem Rope near you, supplied by our nationwide network of wire rope mill depots.



Antenna system erected by Nat Harrison Associates, Inc., Miami, Florida.



Steel

for strength
. . . economy
. . . versatility

This counterweight, one of 36 supplied by Bethlehem, weighs a whopping 400,000 pounds. Bethlehem Rope has the muscle to handle loads like this with ease.

Rebuilding Matures

Urban renewal work goes from planning to building

The flow of urban renewal work to contractors will increase from a trickle to a flood in the early Sixties as several hundred projects around the country graduate from the planning stage to actual construction.

The long gestation period is over. The construction program conceived by the Housing Act of 1949 is now a healthy, husky infant that promises to grow bigger and better with each passing month.

In the past 12 years some 900 urban renewal projects entered the planning stage. Since then, only 500 projects have reached the execution stage, the point at which land acquisition and clearance and relocation of dispossessed persons begins.

So far, only a small percentage of these 500 projects can show construction completed or even under way, but the program is on the move and picking up speed steadily.

- The Urban Renewal Administration authorized twice as many planning advances in 1960 as it did in the previous year.
- As many projects reached execution stage in the past 2½ years as did in the first 9½ years of the renewal program.
- The Housing Act of 1961 authorizes $2 billion for urban renewal, to be lent out at the rate of $600 million a year.

The reasons for the delay in getting the program off the ground have been: lengthy public hearings, involved condemnation proceedings and frequent litigation, paper-shuffling by many public agencies, and relocation of dispossessed families, businesses and industries.

Two-thirds of URA projects have taken more than two years to get from the start of planning to the execution stage. One out of every five has taken more than four years to get this work done. According to URA, 18 months is ample time.

But that's not the end of waiting for contractors. Once execution begins, there's another delay for site preparation and negotiations with a sponsor before construction actually begins. This can add several months or a year to the process.

The big wait is drawing to a close for many of these multimillion-dollar projects and bid advertisements are the next step.

Business in Brief . . .

- **Atomic power**—Pacific Gas & Electric Co. will build with its own money a 325,000 kw generating station at Bodega Bay, in Sonoma County, Calif. The atomic plant will have a boiling water reactor. Station cost is estimated at about $61 million; it will produce power at "slightly less" than 6 mills per kwh. Site construction will start next summer; completion is set for 1965.
- **Aluminum plant**—Cerro Corporation, New York, has acquired an option on a 1,030-acre, deep-water site on the Columbia River at Wauna, Ore., for a proposed $35-million, single pot line aluminum plant. Cerro has also signed a power agreement with the Bonneville Power Administration.
- **Specialty construction**—Terry Industries, Inc., New York City construction company, established a new company that will specialize in construction of three-dimensional radar installations. The new firm, Terry Microwave Electronics & Construction, Inc., is headed by Judd Blass.
- **Atlas expands**—Atlas Powder Co. plans construction of a $17-million glycerin plant at Wilmington, Del.
- **Canal crossing**—The Ways and Works Department of Egyptian Railways, Cairo, is calling for bids for construction of a rail and highway bridge across the Suez Canal at El-Ferdan. The contract will include demolition of an existing bridge at Kilo 64.

State Warns Builders on Ethics

A succession of Delaware State officials have warned roadbuilders that unethical practices by a few would hurt the business reputation of the entire industry.

The admonitions came at a one-day meeting of contractors sponsored by the Associated General Contractors of Delaware and the Delaware Safety Council.

A State Representative, William T. Best, said that self-policing is the best protection against "a situation in which public scorn rubs off on all members of the industry instead of just the guilty few." As a result of recent Congressional investigations of the highway program, construction men find that many innocent contractors have been "condemned in the public mind along with the guilty," Mr. Best said. "The gift-giving, the unwarranted overruns, the unusual connections between contract awards and large political contributions—these are the actions of but a handful of contractors."

Overruns—the practice of stretching a job as a means of obtaining more money to pay for time—came under attack from Attorney General Januar D. Bove, Jr. He said, "A system of submitting and accepting bids in reliance upon the allowance of claims and overruns destroys competitive bidding. There is too much room for favoritism in such allowances."

An investigation of the State Highway Department by Mr. Bove showed that overruns were well above the rate of underruns. His report charged that because of mismanagement and "general moral laxity," by state officials, the state missed out on an extra $7 million in federal funds (ENR Jan. 5, p. 26). Moreover, it alleged that some $2 million "may have been improperly diverted" on 35 highway projects.

Mr. Bove's investigation of the program is still under way.

Long-Term Loan Offered For $55-Million Project

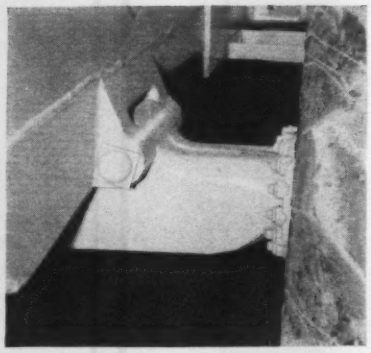
St. Louis' redevelopment plans got a boost recently when an insurance company agreed to make a $31-million loan on the proposed $55-million downtown stadium project.

The 30-year loan from Equitable Life Assurance Society of the United States depends upon the following:

- Raising of the remaining $20 million in equity capital.
- City's completion of necessary access streets, utilities, off-street parking.
- Leasing of the properties to creditworthy organizations and individuals.
- Completion of construction of the project.

The project, for which more than $17 million in equity has been pledged by St. Louis individuals and industries, will consist of a sports stadium, six parking garages and a motel.

BIG PERFORMANCE... LOW MAINTENANCE WITH PINNED-DOWN STABILITY



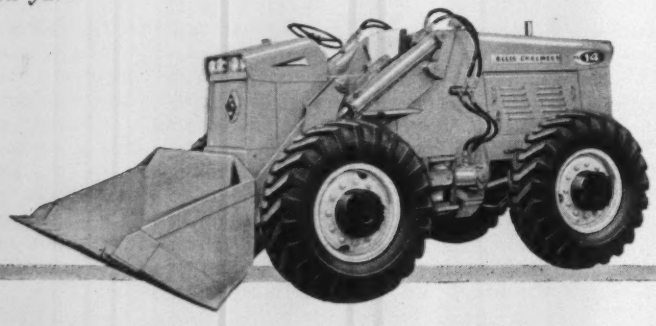
Allis-Chalmers tractor loaders feature axles that are pin-connected to the frame with thick steel pins . . . not automotive-type U-bolt connections. Tractor loaders stay on the job . . . not in the shop.

Pinned-down stability—that's what you get in Allis-Chalmers tractor loaders. Axles on these units are pin-connected to the frame with thick steel pins . . . not lightweight U-bolt connections. There's no rolling or shifting under load . . . no grief with bolts working loose . . . or mounting plates warping out of shape.

Pin-connected axles keep Allis-Chalmers loaders on the job . . . not in the shop. There's far less downtime due to annoying axle problems. You'll also profit from: *extra stability* from a longer wheelbase to length ratio; *single-lever control* of all speed and direction movements; *five-way hydraulic filtering* for safe, efficient operation; *well-located dump cylinders* that are up and away from dirt and *high lift—long reach* for fast, easy loading cycles.

See Allis-Chalmers loaders in action. Be convinced that these units can bring you extra earnings on all excavating and loading work. *Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.*

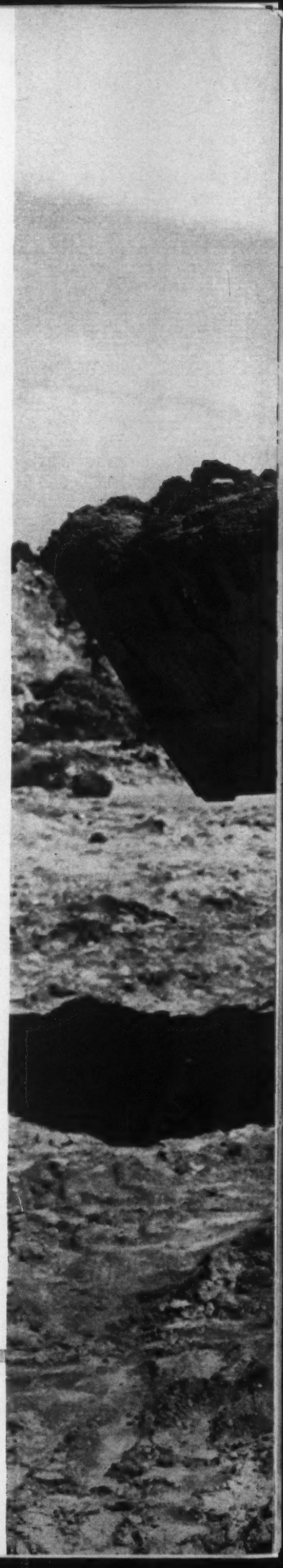
Allis-Chalmers offers 6 tractor loader models—ranging in power from 76.5 to 184 horsepower—in carry capacity from 3,600 to 10,500 lb and with buckets available from 1 to 6 cu yd.



STEP UP YOUR

Performance
Operator comfort
Wearability
Ease of maintenance
Reliability

WITH **ALLIS-CHALMERS**
POWER FOR A GROWING WORLD



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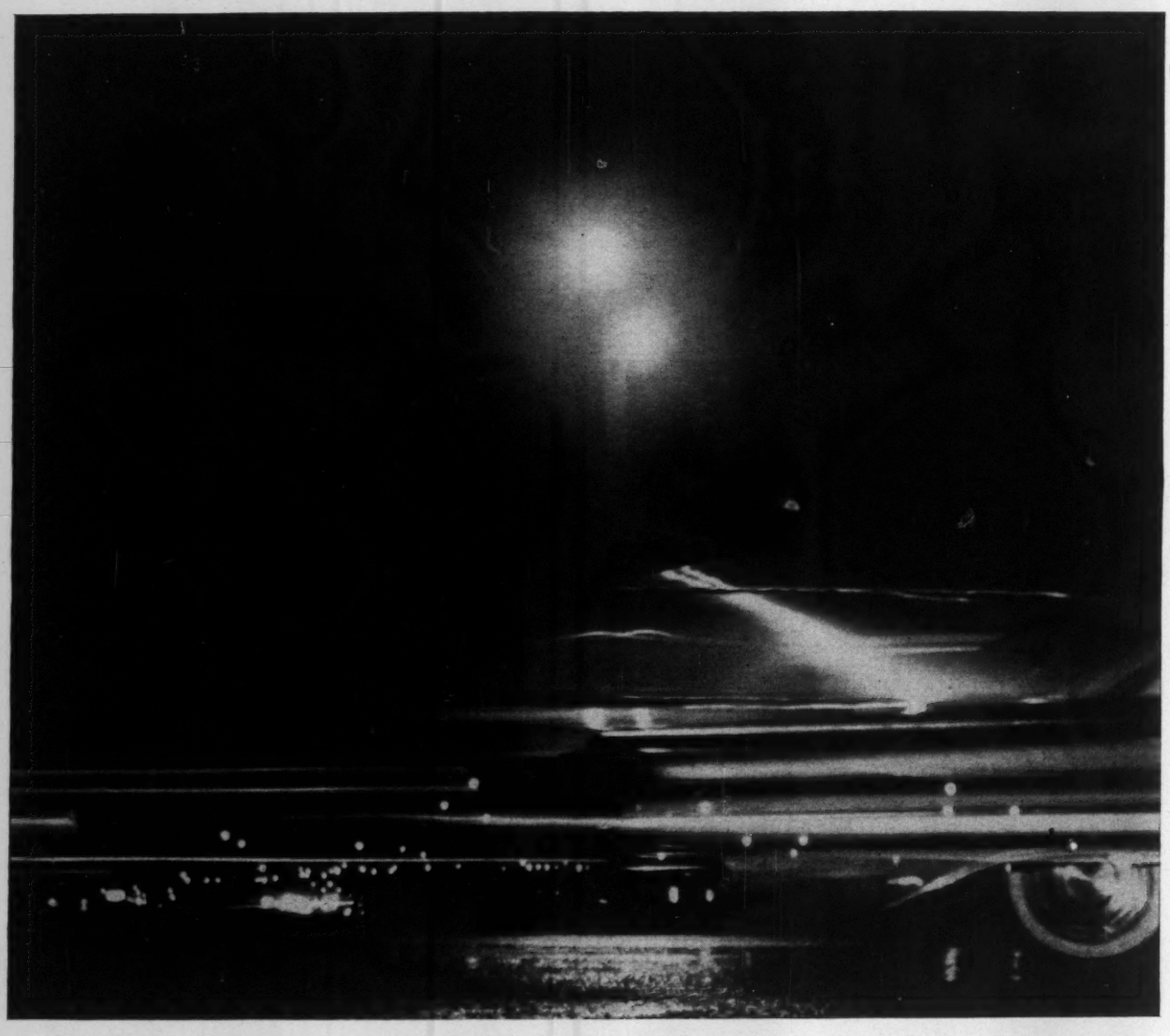
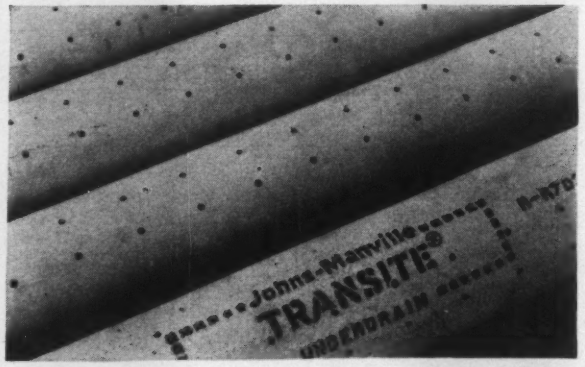


Increase roadway and runway safety with Transite Underdrain Pipe

Eliminate the contributing causes of sags, holes and similar hazards to under-wheel safety with perforated Transite® Underdrain Pipe. Its superior performance in groundwater control has been proved in many county, state and federal installations.

Transite Underdrain has an exceptional weight-to-strength ratio. The coupling, used to form the joints, assures a flexible yet reliably joined system. This, combined with long (10′ and 13′) lengths, keeps the pipe aligned and allows the line to ride with normal soil movement without disturbance to the system. Transite's smooth inner surface and low coefficient of friction assist the flow of water and reduce the opportunity for water-borne silt to build up on the invert. Thus, the accurately sized, drilled and located perforations can perform their function of letting groundwater into the line at a maximum flow rate.

For full details, send for data sheet TR-246. Write to Johns-Manville, Box 14, EN-7, New York 16, N. Y. In Canada: Port Credit, Ontario. Cable address: Johnmanvil.



JOHNS-MANVILLE JM PRODUCTS

JOHNS-MANVILLE

James Hoffa Hits the Highroad

James R. Hoffa, who last week became undisputed boss of the nation's largest labor union, is now ready to give the AFL-CIO a run for its money.

He has challenged the federation to readmit the teamsters union or suffer the consequences. Unless the union is taken back in, he said, "there'll be a splinter group of AFL-CIO unions with which the teamsters will affiliate."

He made the challenge at the 18th Convention of the International Brotherhood of Teamsters. It was the union's first convention since Mr. Hoffa bungled the job of taking over the reins from Dave Beck in 1957. It was held in the Deauville Hotel on Florida's Gold Coast.

As a prelude to the flexing of Mr. Hoffa's muscles, 2,000 realistic delegates to the national convention enthusiastically gave Mr. Hoffa about all an ambitious labor leader could want as a starter:

- The union presidency for a term of five years at a salary of $75,000 a year.
- A unanimous vote of confidence in Mr. Hoffa's integrity and dedication to the 1.7-million-member union he serves.
- Constitutional changes and reaffirmations that relate to the selection of delegates and officers and that tend to assure the continued cooperation and support of local unions.
- A blanket extension of the union's jurisdiction, permitting the organization of workers in any industry and completing the process of making the union's name a misnomer.
- An increase in union dues to help finance big membership drives and a political action program "second to none."
- Assistance in achieving industry-wide, national labor agreements by limiting the power of local unions to refuse to engage in multi-employer, area-wide bargaining.
- The power to affiliate or merge, or form a new labor federation, with other unions.

The convention demonstration of teamster unity and the centralization of power, both present and potential, in the hands of Mr. Hoffa comes at a bad time for the AFL-CIO. And it could make Mr. Hoffa, as he suggests, the pivotal figure in the future of the floundering federation.

Since the expulsion of the teamsters from the AFL-CIO in 1957 on charges of corruption, the federation has lost ground in terms of labor unity, organization and membership strength. The old jurisdictional conflict between the industrial unions and the building trades, which are traditional allies of the teamsters, is still acute. The friction between Walter Reuther and George Meany has become more obvious. Internal criticism of AFL-CIO "infighting" and "stagnation" is mounting.

THIS SMILE won teamster votes. Will it win over the building trades, too?

In the meantime, the teamsters have continued to grow, just as another union with fluid jurisdiction—the United Mine Workers' District 50—claims to have done, "while the AFL-CIO squabbles."

Mr. Hoffa has organized nearly half a million new members in the last three years. His union has emerged from the McClellan investigations and from the subsequent monitorship stronger and more aggressive than before. Contrary to edicts of the AFL-CIO, the teamsters have maintained, and in some cases strengthened, their ties with a number of AFL-CIO unions, including the National Maritime Union and the building trades.

In the construction industry, for example, the teamsters have joined with the building trades in developing a master, national maintenance agreement in an effort to protect craft jobs against invasion by industrial unions. And they helped form the new Joint Appeals Board set up by the Associated General Contractors and seven international unions.

In the course of these developments, Mr. Hoffa has made no bones about his willingness to return to the AFL-CIO if properly invited. Mr. Meany has categorically refused to play the father of a prodigal son.

The internal discord in the AFL-CIO, however, has weakened Mr. Meany's position.

If there is a showdown on the legal problems still faced by Maurice Hutcheson and the carpenters union, or if the building trades are pushed too far in efforts to arbitrate their differences with the old CIO unions, Mr. Hoffa's prophecy of a splinter movement and the formation of a new federation may come true. Building trades' secession has been alternately talked and squelched in the past. And the record shows that six of the building trades never did support the teamsters' expulsion—carpenters, elevator constructors, laborers, lathers, sheet metal workers and stone cutters.

Another part of the picture is that the teamsters have so far refrained from raiding the AFL-CIO unions. But the predatory potential remains—and can be exercised whenever Mr. Hoffa wants to.

All of this tends to put the AFL-CIO between the devil and the deep blue sea.

The federation's ethical protest against the teamsters, for example, has now worn thin. The AFL-CIO has allowed some dirt to accumulate in the corners of its own house. And it is up against the fact that Mr. Hoffa has exonerated himself in all the legal challenges and investigations that have dogged him since the teamsters' expulsion.

On the practical side, if the AFL-CIO continues to banish the dynamic teamsters union, it may invite vigorous and wholesale raiding of its unions and the strategic loss of teamster support of its strikes. These could be serious blows even if they did not end in a splinter movement.

The net result seems to give Mr. Hoffa an indirect but significant voice in federation efforts to solve its own internal problems, including the question of teamster readmission.

As insurance against losing the strategic position he has gained, Mr. Hoffa and a battery of lawyers have made every effort to put the convention results beyond legal challenge. The Landrum-Griffin law, they say, has been scrupulously followed from the selection of delegates through the conduct of the convention itself.

OFFICIAL PROPOSALS

Bids: July 27, 1961

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Canal Law, Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time which is nine-thirty o'clock A.M., eastern standard time, on the 27th day of July 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Types	Deposit	Estimated Cost of Work
DISTRICT No. 1, F. J. Fuller, District Engineer, 353 Broadway, Albany 1, New York						
Albany (Int. Trg. Rte. 787)	FIC 61-16	Interstate Rte. Conn, 540. Rte. 9W to Green Street (City of Albany) Project I-787-3(43)	....	Extension of Storm Sewer	$21,000 Plans $5	$364,000
Albany Rensselaer	TCB 61-1	Repairing the 112th St. Br. & Approaches Between the Cities of Troy and Cohoes	0.22	Asphalt Conc.=0.16 Mi.; Open Steel Floor=0.04 Mi.; Misc. Work=0.02 Mi.; Repairs to 5 Span Br: Reinf. Conc. Arch Sps. 2 @ 121.5'; 2 @ 168' and Steel D.L. Bascule Ctr. Span @ 224'	$20,000 Plans $5	349,000
Essex (Rte. 9, 22)	D.A. 61-2	State Highways 8314, 8238, 232, 859, 8128, 1641, 1687 Proj. RAD 13(5) Cont. 1	25.0±	Tree Trimming	$800 Plans $5	15,000
Essex	D.A. 61-6	Defense Access: Bypass of D&H Railroad Overhead Crossing. Proj. RAD 13(1)	0.29	Asphalt Concrete	$1,500 Plans $5	26,000
Rensselaer (Rte. 22, 43)	FARC 61-104	Stephentown-Lebanon Springs, S.H. 8279; Stephentown Ctr.-Mass. S.H. 680; Stephentown-Center Berlin S.H. 8163. Proj. F-440(3); F-257(5)	11.76	Asphalt Conc.=11.56 Mi. Misc. Work=0.20 Mi.	$159,000 Plans $5	2,898,000
Saratoga (Rte. 32)	FARC 61-60	Stillwater-Schuylerville, Pt. 1, S.H. 5205: Stillwater-Schuylerville, Pt. 2, S.H. 5230 Proj. S-393(1)	2.60	Asphalt Concrete	$16,000 Plans $5	307,000
DISTRICT No. 2, L. Ketchum, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Fulton (Rte. 10, 29)	R.C. 61-124	Schoolhouse-Lassellsville, Pt. 1, S.H. 5554; Rockwood-Fullers Cors. S.H. 8400; Caroga Creek-Canada Lake, S.H. 9039	5.78	Asphalt Concrete, Type 1A	$13,000 Plans $5	229,000
DISTRICT No. 3, E. E. Towlson, District Engineer, 333 E. Washington Street, Syracuse, New York						
Cortland (Rte. 13)	FARC 61-9	Dryden, S.H. 215; Dryden-Cortland, Pt. 2, S.H. 535 Proj. F.U.-513(6)	4.36	Asphalt Concrete, Type 1A	$50,000 Plans $5	898,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Genesee (Rte. 77)	R.C. 61-114	Indian Falls Corfu, Pt. 2, S.H. 922; Corfu-Indian Falls, Pt. 2 & Indian Falls-Alabama, S.H. 8245 & Corfu-Indian Falls, Pt. 2, S.H. 1753	7.60 (0.06 Acc.)	Asphalt Concrete	$34,000 Plans $5	603,000
Livingston (Rte. 15)	FARC 61-115	Lakeville-East Avon, S.H. 8034 Proj. F-61(4)	3.86	Asphalt Concrete=3.82 Mi. Misc. Work=0.04 Mi.	$26,000 Plans $5	479,000
Livingston (Rte. 256)	R.C. 61-113	Scottsburg-Upper Lakeville, Pt. 2, S.H. 8397	8.54	Asphalt Concrete	$25,000 Plans $5	450,000
Monroe	LOSPTL 61-3	Lake Ontario State Parkway (Dewey Ave.-Rochester, City Line)	1.66	Electrical Lighting Facilities	$9,500 Plans $5	170,000
Monroe	M 61-10	East Guard Lock Near the City of Rochester	0.20	Repairs to lock and Canal Walls	$9,000 Plans $5	160,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Cattaraugus (Rte. 242)	R.C. 61-118	Ellicottville-Machias, Pt. 2, S.H. 8416	9.58	Asphalt Concrete	$45,000 Plans $5	822,000
Chautauqua (Rte. 17J)	FARC 61-116	Lakewood-Chautauqua, S.H. 9028 Proj. S-557(2)	0.62	Asphalt Conc.=0.57 Mi; Misc. Work=0.05 Mi.; Prestress. Conc. Beam Bridge 72' Sp.	$14,000 Plans $5	255,000
Chautauqua (Rte. 74)	R.C. 61-117	Cutting-Clymer, S.H. 8278 Clymer-Panama, S.H. 8208	8.86 (0.02 Acc.)	Asphalt Conc.=8.81 Mi. Misc. Work=0.07 Mi.	$54,000 Plans $5	985,000
Erie & Niagara	TAN 61-9	New York State Thruway: Niagara Section, Subdivisions N-8-S and N-8-N	....	Rehabilitation of Electrical Facilities on Grand Island Bridges and Approaches	$13,000 Plans $10	242,000
Niagara (Rte. 93)	FARC 61-84	Lockport-Tonawanda Creek, S.H. 749 Project S-685(4)	9.61	Asphalt Concrete	$39,000 Plans $5	717,000
DISTRICT No. 6, Wm. J. Dennis, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Steuben (Rte. 70)	FARC 61-106 RC 61-107	Big Creek, Pts. 1 & 2, S.H. 906 Big Creek, Pts. 1 & 2, S.H. 906 Proj. F-867(6)	2.09	Asphalt Concrete	$7,000 Plans $5	115,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, New York						
Clinton & Franklin	D.A. 61-5	Various State, County & Town Highways in District 7 (Cont. #2). Proj. RAD-13(5)	165.0±	Tree Trimming	$1,800 Plans $5	32,000
Franklin (Rte. 11)	R.C. 61-127	Malone-Chateaugay, S.H. 5613	4.58	Asphalt Concrete Ty. 1A	$13,000 Plans $5	233,000
Jefferson (Rte. 11)	FARC 61-122	Adams-Watertown, Pt. 3, S.H. 5119 Adams-Watertown, Pt. 4, S.H. 5426 Proj. F-327(12)	2.09	Asphalt Conc., Type 1A	$12,000 Plans $5	224,000
Jefferson (Rte. 178)	FARC 61-95	Adams Vill: So. Main St. & Pierrepont Manor Hamlet: Ellisburg St., S.H. 1166, State Road, Pt. 2, S.H. 426 Proj. S-586(1)	0.80	Asphalt Conc. Type 1A=0.70 Mi.; Misc. Work=0.10 Mi.; Comp. I-Beam Br. 3 Sps. @ 229.9' Tot.	$15,000 Plans $5	280,000
Jefferson	MA 61-2	Maintenance Area for Interstate Rte. 505 (at Intersection with N. Y. State Rte. 12)	....	Foundation Crse. and Chain Link Fencing	$3,500 Plans $5	63,000
St. Lawrence (Rte. 37)	FARC 61-105	Vill. of Massena Ctr. St.-Parker St., FASSH 57-5: Massena So. Side Rte. Pt. 2, FASH 55-7; Massena-Helena, Pt. 1, S.H. 1261 Proj. US-467(4),; U-580(17)	5.13	Alum. Chain Link Fenc.: 6' High, Row Fencing; 4' High, Resetting; Chain Link Fenc, 6' high	$2,500 Plans $5	45,000
DISTRICT No. 8, M. N. Sinacori, District Engineer, Pleasant Valley Rd., Poughkeepise, New York						
Columbia	FASS 61-4	Canaan Ctr.-Austerlitz Town Line, C.R. 79 Proj. S-7(2)	2.36	Calcium Chloride Treat. Gravel	$18,000 Plans $5	322,000
Columbia	FASS 61-3	Manorton-Blue Stores, CR 44 Proj. S-234(4)	1.38	Stabilized Gravel Surf. Crse. Calc. Chloride Treatment	$11,000 Plans $5	194,000
Dutchess	FASS 61-2	Stanfordville-Bullshead-Wurtemburg Rd. C.R. 19 Proj. S-342(2)	4.87	Asphalt Concrete Reinf. Conc. Open Box Br. 23.09' Sp. Rein. Conc. Closed Box Br. 33' Sp.	$45,000 Plans $5	823,000
Rockland	FASS 61-5	New City-Congers Rd. County Road (Main Street to Brewery Rd.) Proj. S-311(3)	0.72	Asphalt Concrete	$19,000 Plans $5	332,000
Ulster (Rte. 55)	FARC 61-126	Napanoch-Montela, S.H. 603 Proj. F-487(3)	5.19	Asphalt Concrete	$13,000 Plans $5	235,000
DISTRICT No. 9, J. C. Frederick, District Engineer, 71 Frederick Street, Binghamton, New York						
Delaware (Rte. 28)	R.C. 61-109	Delhi-Andes, S.H. 982	6.88	Asphalt Concrete	$24,000 Plans $5	437,000
Otsego (Rte. 80)	R.C. 61-119	New Berlin-Edmeston, S.H. 8143	4.60	Asphalt Concrete	$14,000 Plans $5	249,000
Schoharie (Rte. 10)	R.C. 61-110	Cobleskill-Sharon Springs, Pt. 3, S.H. 1911	6.25	Asphalt Concrete	$17,000 Plans $5	310,000
Sullivan (Rte. 42)	R.C. 61-111	Forestburg-Orange Co. Line, S.H. 1478	4.01	Asphalt Conc.	$10,000 Plans $5	183,000
Sullivan (Rte. 17)	R.C. 61-112	Bloomingburg-Monticell, Pt. 2, S.H. 5457; Bloomingburg-Monticello, Pt. 1, S.H. 5510	6.75	Asphalt Conc, Type 1AC	$8,000 Plans $5	153,000
DISTRICT No. 10, A. M. Sarr, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau, Suffolk (Rtes. 106, & 25)	FARC 61-125	Newbridge Road, S.H. 546; Jericho Turnpike, Pt. 2, S.H. 5111; Mattituck-Greenport, Pts. 1 & 3, S.H. 8229; Smithtown Branch-Coram, S.H. 8268 Proj. S-505(1), F-1000(9), and F-434(4)	1.55	Miscellaneous Drainage	$31,000 Plans $5	565,000
New York	FAHRD 61-1	Harlem River Drive (East 132nd St. to West 143rd St.) Contract 132B Proj. U-1133(8)	0.65 (0.93 Acc.)	9" Cem. Conc. Pavt. with Carbon Black=0.65 Mi.; Asph. Conc. Pavt.=0.93 Mi.; Comp. Struct. 5 Spans (Var.) 310' Tot.; Comp. Struct. 10 Sps. (Var.) 553' Tot.:	$150,000 Plans $5	2,803,000

(Continued on opposite page)

OFFICIAL PROPOSALS

(Continued from preceding page)

Suffolk	FALIE 61-3	Long Island Expressway, Road to Islip Avenue) Proj. U-862(32)	Contract No. 12 (Commack	3.80 (8.62 Acc.)	Ped. Overpass—Steel and Conc. Struct. 7 Sps. (Var.) 580′ Tot. 9″ Cem. Conc. Pavt. with Carb. Black, 2@ 24′ Var.= 3.45 Mi.; Misc. Work=0.35 Mi.; Access=3.34 Mi. Cem. Conc. Pavt. and 5.28 Mi. Asph. Conc., 8 H.G.S. Comp. I-Beam, 1 Sp. 83.6′; 1 Sp. 84.2′; 4 Sps. 286.4′ Tot.; 4 Sps. 279.1′ Tot; 4 Sps. 286.7′ Tot.; 1 Sp. 72.1′; 1 Sp. 72.1′; 4 Sps. 231.5′ Tot.	$375,000 Plans $10	6,811,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Department of Public Works" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bid deposit, the execution of the contract and bond shall conform to the provisions of the Highway Law, as set forth in the "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: July 27, 1961

New York State Road Work
Orange & Dutchess Counties

NOTICE TO CONTRACTORS: THE NEW YORK STATE BRIDGE AUTHORITY, BRIDGE PLAZA, POUGHKEEPSIE, N. Y. Pursuant to the provisions of the Highway Law, and Article 3, Title 2 of the Public Authorities Law, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 27th day of July 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., on behalf of said Authority, for the following project:

ORANGE & DUTCHESS COUNTIES
KURT G. RAUER, DISTRICT ENGINEER, PLEASANT VALLEY ROAD, POUGHKEEPSIE, NEW YORK

NAME OF PROJECT & MILES—Newburgh-Beacon Bridge over the Hudson River (Cont. 3) Superstructure 14 SPS. 6870′ Total. 1.30 Miles.

DEPOSIT FOR PLANS—$5.00.
BID DEPOSIT—$600,000.
ENGINEER'S EST.—$10,725,000.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, New York, and at the office of the District Engineer, noted above, and at the office of the State Department of Public Works, 270 Broadway, New York City, and may also be seen at the New York State Bridge Authority Office at Mid Hudson Bridge Plaza, Poughkeepsie, N. Y.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned to the Bureau of Contracts in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications.

Proposal must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the NEW YORK STATE BRIDGE AUTHORITY for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, and Public Authorities Law, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS
FOR
NEW YORK STATE BRIDGE AUTHORITY
DR. JOHN L. EDWARDS
CHAIRMAN

Bids: August 30, 1961

Virginia State Ports Authority

NOTICE TO CONTRACTORS

The Virginia State Ports Authority will receive sealed bids at its office on the 16th Floor, Maritime Tower, Norfolk, Va., until 2 P.M. (Eastern Standard Time) August 30, 1961, at which time and place they will be publicly opened and read, for the construction of certain general cargo terminal facilities and for the improvement of certain existing facilities at Lamberts Point and Sewells Point in the City of Norfolk, Va. Major components of the work consist of a 5-berth finger pier with reinforced concrete deck on open concrete pile foundation, transit shed superstructure covering 320,000 sq. ft. of usable storage space, 2 gantry cranes, dike and bulkhead, 2 back-up warehouses (each 120′ x 750′ approximate dimension), a refrigerator warehouse having usable capacity of 100,000 cu. ft., a service building and gear house, railroad trackage, road net, electrical and water supply and distribution systems and other supporting facilities.

The Drawings, Specifications, Instructions to Bidders, and other Contract Documents are on file and available for inspection at the offices of the Virginia State Ports Authority in Norfolk, Va., New York, N. Y., and Chicago, Ill.; at the offices of Lockwood Greene Engineers, in Spartanburg, S. C. and New York, N. Y.; at the office of Blackburn and Blauvelt Engineers, in Richmond, Va.; at the office of the Chief Engineer, Norfolk and Western Railway Company, Roanoke, Va.; at the offices of the Associated General Contractors of America in Raleigh, N. C., and Atlanta, Ga.; at the offices of F. W. Dodge Corporation in Norfolk, Va., Richmond, Va., and Baltimore, Md.; and at the office of the Builders & Contractors Exchange, Inc., in Norfolk, Va., and Richmond, Va. Drawings, Specifications, Instructions to Bidders, and other Contract Documents may be obtained by application, accompanied by check or money order for $200.00 per set, to: Lockwood Greene Engineers, 1020 Montgomery Building, Spartanburg, South Carolina. Bona fide General Contractors, who submit a bid, may obtain a refund by returning the Drawings and Specifications in good condition.

The work is divided into two parts, one of which is referred to as Division I and consists of all the work to be performed at Lamberts Point, and the other of which is referred to as Division II and consists of all the work to be performed at Sewells Point. Any bidder may submit a bid on the work in either or both of such Divisions. A separate contract covering the work in each Division, or one contract covering the work in both Divisions—dependent upon which involves the lowest cost for the entire work—will be awarded to the lowest responsible bidder(s). The Virginia State Ports Authority reserves the right to reject any or all bids.

No bids may be withdrawn during the period of 120 days from the date of opening of bids.

In accordance with Title 54, Chapter 7 of the Code of Virginia of 1950, as amended, it will be necessary for a bidder, whether a resident or non-resident of Virginia, to show evidence that he holds a certificate of registration issued by the Virginia State Registration Board for Contractors, before his bid is considered.

Bids: July 20, 1961

New York State Road Work
Willowbrook Expressway

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m., Advanced Eastern Standard Time, on July 20, 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON WILLOWBROOK EXPRESSWAY, CLOVE LAKES EXPRESSWAY TO BAYONNE BRIDGE, RICHMOND COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. SM-185.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York.
(b) Mr. Austin M. Sarr, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island, New York.
(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. Refunds of deposits for plans, specifications and proposals will be made *only* in case the deposits of individual sets are $10.00 or more, per Chapter 835, Laws of 1960.

The Engineer's Estimate of cost for this work is $31,300.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Department of Public Works" for the sum of $1,750.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law as set forth in "Instruction to Bidders."

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF PUBLIC WORKS

OFFICIAL PROPOSAL

RATE $2.70 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a. m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Class. Adv. Div.; Engineering News-Record, P. O. Box 12, New York 36, N. Y.

OFFICIAL PROPOSALS

OFFICIAL PROPOSALS

AUSTRALIA

SNOWY MOUNTAINS HYDRO-ELECTRIC AUTHORITY

Tenders are invited for Schedule of Rates contracts for furnishing labour and materials and performing all work for the construction in New South Wales, Australia, of the following:

CONTRACT NO. 20,063 — **GEEHI DAM, SNOWY-GEEHI TUNNEL (GEEHI SECTION) AND APPURTENANT WORKS**

Geehi Dam will be a rockfill dam approximately 300 feet high and crest length of approximately 865 feet, with central earth core, river outlet works and a morning glory type spillway.

The Snowy-Geehi Tunnel (Geehi Section) will comprise the construction of approximately 30,000 feet of horseshoe shaped tunnel partially lined with concrete. The excavated section of the tunnel will be 20 feet 4 inches high and 20 feet 8 inches wide.

Also included in the contract is a 20 foot diameter circular tunnel approximately 2,400 feet long connecting the Snowy-Geehi Tunnel to the Murray I Pressure Tunnel and an Outlet-Inlet Structure 190 feet high which will connect to the circular tunnel approximately 80 feet below ground surface level.

CONTRACT NO. 20,064 — **MURRAY I PRESSURE TUNNEL AND APPURTENANT WORKS**

The Murray I Pressure Tunnel will be a fully concrete lined horseshoe shaped pressure tunnel 22 feet 9 inches high by 22 feet 9 inches wide and approximately 36,000 feet long. The works also include a section of fully lined circular tunnel 22 feet 9 inches diameter approximately 2,000 feet long. At the downstream end the tunnel will bifurcate into two 13 feet 9 inches internal diameter tunnels each approximately 600 feet long. Approximately 450 feet of each of these tunnels adjacent to the reinforced concrete surface valve house will be steel lined.

At Bogong Creek there will be an intermediate intake shaft 315 deep and an access and drainage adit.

Also included in the contract will be a surface surge tank 150 feet in diameter connected to the pressure tunnel by a vertical concrete lined shaft 27 feet diameter and approximately 350 feet deep.

RELATION TO OTHER WORK

The Authority has recently invited tenders for Contract No. 20,062, Island Bend Dam and Snowy-Geehi Tunnel (Snowy Section) and Appurtenant Works. The works of Contract No. 20,063 are immediately adjacent to those of Contract No. 20,062; the contents of the Tender Documents for both Contracts Nos. 20,063 and 20,064 will, where appropriate, be substantially similar to those of Contract No. 20,062.

ALTERNATIVE TENDERS

Tenderers are invited to submit tenders for one or both contracts, and may submit an alternate tender conditional on the authority accepting their tenders for both contracts.

TENDER DOCUMENTS

Tender documents, for each contract, consisting of the Form of Tender, Conditions of Tendering, General Conditions of Contract, Draft Form of Agreement, Schedule of Rates, Table of Estimated Quantities and Amounts, Specification and Drawings will be available on 31st July 1961 and may be obtained by prospective Tenders on payment of twenty-two dollars fifty cents (U.S.) per set for each contract on application to:

Australian Consulate-General,
International Building,
Rockefeller Center,
636 Fifth Avenue,
NEW YORK, N. Y.,
U.S.A.

Four additional sets of documents for purposes of tendering will be provided free of charge at the time of inspection of the site. All relevant informaion may be obtained from the above offices.

SUBMISSION OF TENDERS

Tenders for the contracts must be submitted in duplicate in accordance with the Conditions of Tendering, enclosed in sealed envelopes appropriately endorsed with the contract number and name of the works tendered for, addressed to:

The Business Manager,
Snowy Mountains Hydro-electric Authority,
Post Office Box 332,
COOMA NORTH, N.S.W., AUSTRALIA

The tenders must be lodged in the Tender Box at Head Office of the Authority at Cooma or be sent by prepaid post in time to be delivered in ordinary course of mail by 12:00 noon on Monday, 30th October 1961.

K. See, Business Manager

District of Columbia—Bridge Construction —Dept. of Highways & Traffic, D. C., June 21, 1961. CONSTRUCTING THE RIVER CROSSING SUPERSTRUCTURE FOR THE THEODORE ROOSEVELT BRIDGE, FEDERAL-AID INTERSTATE PROJECT NO. I-66-1(14)0, Contract No. 3, Invitation No. C-621-H, consisting of approx. 4,128 cu. yds. Air-Entrained Superstructure Concrete; 962,500 lbs. Reinforcing Steel; and 9,474,000 lbs. Structural Metalwork. (Wage rates have been predetermined by Labor Dept.) Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Penn. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer (Phone NA 8-6000, Ext. 448). SEALED BIDS to be opened 3:00 PM, EDT, July 26, 1961, in Room 424, 499 Penn. Ave., N.W.

Contractors Watch This Section—

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

OFFICIAL PROPOSALS

To Contractors Qualified and Interested in Bidding on Construction of 40 Miles of Dead Sea Dikes

The International Bank for Reconstruction and Development has authorized a $25,000,000 loan to the Dead Sea Works, Ltd. of Israel to assist in financing a large expansion of the Company's facilities for producing potash and bromine from Dead Sea brine. Accordingly, the Company intends to call for international tenders, in the near future, for the projected extension of its evaporation area. This extension comprises construction of evaporation pans and a feeder canal.

The works will consist mainly of the construction of dikes by underwater placement of fill material. These dikes are to be made of pervious riverbed material with an impervious (clay) core and protected with rubble. The construction of certain sections of dikes might involve underwater excavation to reach a clay layer, underlaying the first main salt stratum, which might sometimes be 3 meters thick.

The total length of the dikes amounts to approximately 40 miles, of which ± 60% is of an average height of 7½ meters above the sea bed.

The total quantity of material is expected to be in the order of 9,000,000 m³, of which approximately 10% for the impervious core and 15% for the rubble slope protection.

A certain length of the dikes will require improved foundations, in which case soft silty material will have to be removed by dredging or otherwise.

The estimated period of construction is about 3 years. The contractor will be required to complete several sections of the works on specified dates.

The tender documents for the above works may be expected by the end of August 1961.

Firms which wish to be included in the selective list of contractors for the bidding on the above mentioned project should send their request not later than the 15th of August 1961 together with prequalification data. These data should include among others the following:

a. a detailed description of previous earth dike works constructed by underwater placement, their value and main quantities;

b. a general description of earth works executed, other than dike construction;

c. a description of floating and land equipment, which the contractor would have available for the execution of the envisaged works in Israel;

d. the financial and legal status of the firm.

Contractors should apply by airmail to:
DEAD SEA WORKS LTD.,
POTASH HOUSE, P.O.B. 75,
BEERSHEBA, ISRAEL.

Bids: July 31, 1961

The Port of New York Authority New York International Airport

PAVEMENT REPAIRS RUNWAY 4-22
CONTRACT O & M 661

Sealed proposals for making pavement repairs of runway 4L-22R "V" at New York International Airport will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 a.m. o'clock July 31, 1961, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt will be issued. The receipt is then to be delivered to the Department of Purchase and Administrative Services, who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of Proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, July 13, 1961

Bids: July 27, 1961

New York State Road Work Oneida & St. Lawrence Counties

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special pro-

(Continued on opposite page)

OFFICIAL PROPOSALS
(Continued from preceding page)

visions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 27th day of July 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee St., Utica 1, New York						
Oneida	D.A. 61-3	City of Rome: Griffiss Air Force Base Access Road Proj. RAD 12(1)	0.56	9" Cement Concrete Pavt.=0.55 Mi.; Misc. Work=0.01 Mi.; Comp. I-Beam Bridge, 3 Spans, 206.70' Tot.	$19,000 Plans 5	$338,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
St. Lawrence	R.C. 61-131	Potsdam Village, S.H. 5308	0.20	Bridge Repairs	$8,000 Plans 5	$150,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal Aid Highway Act. of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Department of Public Works" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bid deposit, the execution of the contract and bond shall conform to the provisions of the Highway Law, as set forth in the "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: August 8, 1961

Office of City Purchasing Agent
Nashville, Tennessee

Sealed bids will be received by the Purchasing Agent of the City of Nashville, Tennessee, at the office of the Purchasing Agent, until 10:00 A.M., Central Standard Time, on August 8, 1961, for Contract No. 9.1—30" By-Pass Main, 36" and 48" Transmission Main; Contract No. 9.2—48" Transmission Main; and Contract No. 9.3—48" Transmission Main, all in accordance with plans and specifications which are on file at the office of the Director of the Nashville Waterworks Department, City Hall, Nashville, Tennessee, and also at the office of The Chester Engineers, 601 Suismon Street, Pittsburgh 12, Pennsylvania. Immediately after closing time for receipt of bids, they will be publicly opened and read aloud in the office of the Purchasing Agent, City Hall.

The successful bidder will be required to furnish satisfactory Performance and Labor and Materialmen's Bonds.

Copies of the plans and specifications may be obtained by depositing Fifty Dollars ($50.00) with the Engineers for each set of documents so obtained, the full amount of which will be refunded to each actual bidder, and Twenty-Five Dollars ($25.00) will be refunded to all others who return plans and specifications in good condition within ten (10) days after the opening of the bids.

The right is reserved by the City of Nashville, through the Mayor, to reject any and all bids, to waive any informalities in the bids received, and to accept any bid which, in its opinion, may be for the best interest of the City.

A certified check or bank draft, payable to the City of Nashville, or a satisfactory bid bond executed by the bidder and a Surety Company, in an amount equal to Five Per Cent (5%) of the bid, shall be submitted with each bid.

No bid may be withdrawn for sixty (60) days after the scheduled closing time for the receipt of bids.

CITY OF NASHVILLE, TENNESSEE
E. B. SMITH
PURCHASING AGENT

Bids: July 26, 1961

Passaic Valley Sewerage Commissioners

NOTICE TO CONTRACTORS

Notice is hereby given that the Passaic Valley Sewerage Commissioners have designated Wednesday, July 26, 1961, at two o'clock in the afternoon, Eastern Daylight Saving Time, when they will meet at their usual place of meeting, 790 Broad Street, Newark, New Jersey, to receive sealed proposals in writing for furnishing all labor and materials for repairs to the Commissioners' existing dock at the foot of Wilson Avenue, Newark Bay, Newark, New Jersey.

It is the purpose of Passaic Valley Sewerage Commissioners not to award the contract to any bidder who does not furnish evidence satisfactory to them that he is responsible and that he has sufficient financial resources, ability, experience and plant to enable him to prosecute the work successfully, and to fulfill all requirements of the contract.

Each bid must be accompanied by cash, or by a certified check, or by a bid bond, in an amount not less than Two Thousand Dollars ($2,000.) enclosed in a sealed envelope, with the bid. Certified checks shall be drawn upon a National Bank or a Trust Company doing business in the State of New Jersey or the State of New York, and shall be payable to the order of the Passaic Valley Sewerage Commissioners.

Passaic Valley Sewerage Commissioners reserve the right to reject any or all bids, or to accept any bid should they deem it to be for their interest so to do. Passaic Valley Sewerage Commissioners also reserve the right to waive any informality in any bid should they deem it to be for their interest so to do.

Form of Contract and Specifications, together with the blank form of proposal may be obtained at the Commissioners' office from S. A. Lubetkin, Chief Engineer.

PASSAIC VALLEY SEWERAGE COMMISSIONERS
Mary E. Schaedel, Clerk
Dated: July 5, 1961

Bids: August 14, 1961

Toronto Transit Commission

TENDERS FOR
TRACTION POWER CONTRACT TP-I
BLOOR-DANFORTH-UNIVERSITY SUBWAY
STAGE I

Sealed tenders endorsed "Traction Power Contract TP-I Bloor-Danforth-University Subway Stage I" and addressed to the Toronto Transit Commission, General Secretary's Office, will be received by the Commission at its office, 1900 Yonge Street, Toronto 7, Ontario, Canada, until four (4) p.m. Eastern Daylight Saving Time (3 p.m. Eastern Standard Time) on Monday, August 14th, 1961.

The work for which tenders are invited consists of the supply and installation of traction power equipment and cable for 600 volt D.C. system and D.C. battery control equipment for the Bloor-Danforth-University Subway, Stage I, together with miscellaneous work appurtenant and collateral thereto as specified in the contract documents and shown on the plans.

All tenders must be on the Commission's form of tender and must be accompanied by cash or a certified cheque in the amount of $5,000.00 (five thousand dollars).

The successful tenderer will be required to furnish, execute and deliver to the Commission a performance bond satisfactory to the Commission in the amount and within the time set out in the contract documents.

The contract documents, including plans and specificaions, will be available at the Commission's Subway Construction Branch, 1138 Bathurst Street, Toronto, on and after Tuesday, July 4th, 1961.

Copies of the contract documents may be obtained by depositing one hundred dollars ($100.00) with the Commission for each set of documents. The amount of the deposit will be refunded on the return of the plans and specifications in good condition within thirty (30) calendar days after the opening of the tenders.

The Commission reserves the right to reject any or all tenders.

No tender may be withdrawn after the scheduled closing time for receipt of tenders for forty-five (45) calendar days.

H. E. Pettett,
General Secretary

Bids: July 27, 1961

The Port of New York Authority
Port Newark

BUILDINGS 261, 262, 263 & 264
ALTERATIONS TO GUTTERS
CONTRACT PN-560.012

Sealed proposals for the alteration to portions of gutters on Buildings 261, 262, 263 and 264 at Port Newark will be received at the office of the Chief Engineer of the Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 p.m. on Thursday, July 27, 1961, at which time said proposals will be opened and read in Room No. 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, July 13, 1961

District of Columbia—Bridge Construction—Dept. of Highways & Traffic, D. C., June 23, 1961. SOUTHWEST FREEWAY AT SOUTH CAPITOL STREET, BRIDGE NO. 1104, PIERS & ABUTMENT, FEDERAL AID PROJECT NO. I-95-1(13)2— Invitation No. C-61152-H, consist. of 3,696 cu. yds. Class AA Special Pier Concrete; 3,586 cu. yds. Class BB Substructure Concrete; 3,619 cu. yds. Class BB Superstructure Concrete; and 7,670,000 lbs. Structural Steel. (Wage rates have been predetermined by Labor Dept.) Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Penn. Ave., N.W., upon deposit of a certified check for $20.00 per set, payable to D. C. Treasurer (Phone NA 8-6000, Ext. 448). SEALED BIDS to be opened 3:00 PM, EDT, August 1, 1961, in Room 424, 499 Penn. Ave., N.W.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5626) will be received at San Angelo, Texas, until 10 a.m., Central Standard Time, August 10, 1961, for furnishing labor and materials for Earthwork,

(Continued on the following page)

OFFICIAL PROPOSALS
(Continued from preceding page)

Concrete Lining, and Structures, Distribution System, San Angelo Project, Texas. Location San Angelo, Texas. Principal items are 303,600 cu. yds. excavation; 15,100 cu. yds. concrete; furnishing and installing 110 slide gates; and other work. Completion time 575 days. For particulars, address Bureau of Reclamation, P. O. Box 271, San Angelo, Texas; P. O. Box 1609, Amarillo, Texas; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5622) will be received at Placerville, California until 9 a.m. Pacific Standard Time (10 a.m. Pacific Daylight Saving Time), July 27, 1961, for furnishing labor and materials for Folsom Outlet Modifications for Nimbus Fish Facilities—Folsom Unit—American River Division—Central Valley Project, California. Location at Folsom Dam, near Folsom, California in Sacramento County. Principal items are Lump sum—Modifying trashracks; Lump sum—Furnishing and erecting steel superstructures; and other work. Completion time 165 days. For particulars, address Bureau of Reclamation, P. O. Box 2511, Sacramento, California; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

Sealed bids for construction of the Employment Security Building, Department of Labor, Washington, D. C., will be received until 2:30 pm, EDT, August 15, 1961, in Rm. 7122, GSA Regional Office Building, 7th & D Sts., SW., Washington, D. C., and then publicly opened in Rm. 7128 at the above address. Bidding material will be available at Rm. 1308, General Services Bldg., 19th & F Sts., NW., Washington 25, D. C., Phone EXecutive 3-4900, Ext. 2397. Upon request, general contractors interested in bidding the complete project will be issued 3 sets of drawings and specifications without a deposit; 3 additional sets may be obtained by depositing $100.00 per set. One set of drawings and specifications will be supplied to each principal subcontractor, as determined by the Service, upon receipt of deposit in the amount of $100.00. Deposits will be refunded for sets if returned in good condition within 20 days after bids are opened. Checks or money orders for deposits or furnished as bid guaranty must be made payable to the General Services Administration. One set of drawings and specifications will be furnished to builder's exchanges, chambers of commerce and other similar organizations with the understanding that the set will be retained on their premises and made available for inspection by any interested subcontractor or material firm. Commissioner of Public Buildings, General Services Administration.

OFFICIAL PROPOSAL

RATE: $2.70 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, P. O. Box 12, New York 36, N. Y.

EMPLOYMENT OPPORTUNITIES
NATIONAL COVERAGE

DISPLAYED RATE:
The advertising rate is $45.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.
An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.
Subject to Agency Commission.

JULY 20TH ISSUE CLOSES JULY 10TH

UNDISPLAYED RATE:
$2.70 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.
Position Wanted ads take ½ of above rate.
Box numbers—count as 1 line.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.
Not subject to Agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

CHIEF STRUCTURAL ENGINEER
Los Angeles Location

Holmes & Narver, Inc. has an immediate opening for a Chief Structural Engineer at their Corporate offices located in Los Angeles, Calif.

Candidates for this position must possess a minimum of 10 to 15 years varied experience in the design, and supervision of design, of complex structural steel, reinforced concrete and timber structures.

California Structural registration required.

Interested persons are urged to forward a resume at once for our review.

All inquiries will be held in strictest confidence.

HOLMES & NARVER, INC.
828 So. Figueroa
MA 7-4377

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 645 N. Michigan Ave.
SAN FRANCISCO 11: 255 California St.

• POSITIONS VACANT

Structural Engineer-Midwest consulting firm seeks Ph.D. to design complex steel structures, reinforced and prestressed concrete. Preference will be given to applicants with practical experience. Permanent position with established firm in business since 1929. Moving expenses paid. Send resume, including education, experience, and personal qualifications to P-6245, Engineering News-Record.

Estimators — Mech., Elec., Arch., Struct. Expd. estimators to prepare & check change orders on construction work. Openings in various locations in U.S.A. Please send complete resume & salary requirements. All replies confidential. P-6929, Engineering News-Record.

Graduate Civil Engineer. Westchester County, N. Y. office of large firm. Quantity take-off, etc. Permanent position with excellent opportunity. Young man preferred. Experience not necessary. P-6898, Engineering News-Record.

Sanitary Engineer with extensive experience in preliminary engineering, detailed design, general overall supervision or client contact on sanitary projects. Submit complete resume of education, experience, and qualifications, together with salary requirements. Stanley Engineering Company: Muscatine, Iowa.

Wanted: Design Engineer—Must be very capable and reliable in detailing, checking and designing structural steel—location, Mid-West. Send complete resume, including references, salary and availability. P-7017, Engineering News-Record.

City Engineer—in a midwest county seat city of 5,000. Take charge of street and sewer program. Work closely with water department. Must be civil engineer registered in Iowa. Salary open. This is a new position—service has been on consulting basis. Send resume to City Clerk, Charlton, Iowa.

GENERAL CONSTRUCTION SUPERINTENDENT
Salary Open

This is an exceptional opportunity—with definite management potential—to join a nationally known engineer contractor corporation located in New York.

The man we seek should have a record of accomplishment as general superintendent on lump sum projects. Additional experience must include estimating, proposal preparation and sub-contract negotiations.

Reply in full confidence to:
P-7031, Engineering News-Record Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

• POSITIONS VACANT

Graduate Civil Engineer—two years minimum experience on highways, drainage or other municipal engineering work. Send complete resume including references, salary requirements and availability. Good opportunity for young engineer. P-6992, Engineering News-Record.

Electrical Engineer—Estimator—man with experience in electrical estimating particularly in industrial, pole line, and power plant work. Reply to "Estimator" Box 1078, Columbus, Ga.

Mid-west city of 35,000 desires combination Director of Public Utilities and Water Utilities Superintendent. P.E. desirable but not essential. Also requires Electric Utilities Superintendent with line experience. Send complete resume. P-6966, Engineering News-Record.

Construction Superintendent required on Industrial Building. State experience. P.O. Box 307, Port Chester, New York.

Soils and foundation engineer—recent graduate—Masters Degree, design and construction experience desirable. Salary open. Location Southwest. Write P-6838, Engineering News-Record.

Borough Staff Engineer. Engineer—(Registered Civil Engineer) having registration in Pennsylvania, desired with experience in engineering, layout, construction of highways and sewers, to serve as first Borough Staff Engineer for a rapidly expanding municipality. Applicant must be a working engineer qualified and able to do all the work from preliminary plans to the completed project. Further details are available upon writing the Borough Manager, Borough of Monroeville, 2700 Monroeville Road, Monroeville, Pennsylvania.

Electrical Engineer—Experienced in design of electric transmission, distribution and substation facilities. Progressive consulting engineering firm offers permanent employment with opportunity for personal development and advancement potential. Submit resume and salary requirements to Stanley Engineering Company, Muscatine, Iowa.

(Continued on opposite page)

WHEN *Answering Advertisements* PLEASE *do not send original letters, certificates or photographs. We cannot be responsible for their return. Please send photostat or carbon copies.*

REPRESENTATIVES WANTED

Sales and promotional work with pile foundation contractors, architects and engineers. Central, Southern and Western U. S. Patented Pile Fittings for Shell, H-Beam, Pipe and Timber.

RW-6860, Engineering News-Record
Class Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

POSITIONS VACANT

(Continued from opposite page)

Openings for recent Civil Engineer graduates with military obligations completed who desire to learn the construction business. Must be ambitious, aggressive, dependable, use no intoxicants, willing to start in the field on industrial buildings, defense construction, heavy construction, and willing to move. Preferably single. We operate throughout Kansas and adjacent states; offer excellent opportunity for advancement. Martin K. Eby Construction Co., Inc., P. O. Box 1679, Wichita, Kansas.

Construction Engineer—Estimator for Public Works, highways, sewers, drains, excavations. Permanent. Location lower New York State. P-7026, Engineering News-Record.

Graduate Engineer: Upstate New York Contractor has opening for young man W/BSCE Degree for Estimating and Engineering position. Experience in millwrighting and industrial building desirable. P-7043, Engineering News-Record.

Sewage Treatment Plant Engineers (Civil Service Positions) The City of Nashville, Tennessee is accepting applications for the following positions: Sewage Disposal and Treatment Engineer-Graduate Sanitary Engineer or Civil or Chemical Engineer with six years experience in sewage treatment plant; age 28 to 45 years old; salary $7500 to $8200 year. Assistant Sewage Disposal and Treatment Engineer—same qualifications as above only with four years experience and age 26 to 45 years; salary $6000 to $6600 year. Chief Sewage Chemist-Graduate Chemist with 5 years full time experience in analytical work in sewage treatment; age 26 to 45 years; salary $5100 to $6000 year. All of the above under Civil Service with liberal pension, vacation and sick leave benefits. If called for interview City will pay travel and reasonable incidental expenses. Write giving education, experience, references and personal data to: Director of Waterworks, Room 201 City Hall, Nashville 3, Tennessee.

• *POSITIONS WANTED*

General Superintendent-Proj. Mgr. Hvy Const. roads, bridges, bldgs, flood control tunnels, sewage & sewage disp. Concrete mech. background. PO Box 48 Clayton 5 Mo.

BSCE, Age 36, Plant Engineer, industrial building construction, structural design, specifications, and architect-engineer liaison. Reg. N.Y.P.E. Seeks promising position in Northeast. PW-6933, Engineering News-Record.

Chief Estimator—Project Manager. C.E.— age 33 Commercial, industrial and heavy construction. Projects from estimate to completion including takeoff pricing, subcontract negotiations, buying and job co-ordinating. Presently employed but willing to relocate. PW-6968, Engineering News-Record.

General Superintendent, Project Manager 37. P.E., 10 years exp. sewers, highways, shopping centers. Good organizer. Any locale. PW-6977, Engineering News-Record.

Project Manager, entire supervision, contract admin., methods & equipment, estimates, 24 yrs. exp. hvy-constr. major projects U.S. & O.S. PW-6964, Engineering News-Record.

Construction Superintdt. or Gen. Inspector. 10 years exp. Thoroughly experienced in all phases of construction, foundations, roads, buildings, erection & operation of batch, washing, crushing plants, excavations, refineries, gunite work, industrial precast, waterfront. Particularly competent in coordinating all classes of personnel, equipment, private & public works. Domestic and overseas jobs. PW-6890, Engineering News-Record.

Superintendent — Experienced complete supervision, highway construction, excavation, grading, other. Address: PW-6896, Engineering News-Record.

(Continued on the following page)

WANTED FOR HIGHWAY CONSTRUCTION

Capable and Experienced

FOREMEN—SUPERINTENDENTS—ENGINEERS

Large nationally operating heavy works contractor with Main Office located in the Midwest and branch offices and equipment yards at several locations between Mississippi Valley and East Coast has need for additional personnel to replace retirements and re-expand organization. *We have openings for:*

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CIVIL ENGINEERS For field layout work including assistance to estimators.

To qualified men we offer excellent opportunity for long term association with an old established firm ranking among top contenders in the industry. Permanent personnel participate in pension and profit sharing plans, group hospitalization and other benefits. Answer in detail; replies will be kept confidential.

P-7028, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

CHIEF ESTIMATOR

One of the nation's oldest contractors has a position available for a thoroughly seasoned and professional Chief Estimator. A degree in Architectural or Civil Engineering is required plus a minimum of ten years of all around estimating experience. This should include the preparation of bids on major construction work in the field of buildings, factories, power plants and structures of all kinds. This is a real challenge and career opportunity for the man who considers himself a real professional estimator. Send complete resume and your minimum salary requirement to:

P-6998, Engineering News-Record,
645 N. Michigan Ave., Chicago 11, Ill.

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Chemical Engineers (Research)
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Junior and Senior Contracts Engineers

All of the above should hold degrees and their training and experience should be on structural design as related to large plate structures; such as, field erected containers, towers, stacks, etc. Address all applications to: Industrial Relations Department,

GRAVER TANK & MFG. CO.
Division—Union Tank Car Company,
35 East Wacker Drive, Chicago 1, Illinois

WANTED
CHIEF BRIDGE ENGINEER

Division of Highways, STATE OF ALASKA. Registered professional engineer—At least 10 years of experience —Three years supervisory experience— Retirement, annual and sick leave benefits—Group health insurance—Civil Service. Write: Director of Highways, Box 1941, Juneau, Alaska.

FIELD ENGINEER

Nationally known organization offers excellent opportunity for young civil engineer graduate. Engineering consulting and promotional work in highway and concrete fields. Location Ohio, Western Pennsylvania and Kentucky area. Car allowance and expenses. Permanent position. Salary based on qualifications and experience.

P-6996, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

EMPLOYMENT OPPORTUNITIES

POSITIONS WANTED
(Continued from preceding page)

Construction Manager, age 39, BSCE, registered. 15 years diverse experience in heavy construction and industrial maintenance. Estimating, scheduling, field layout and job supervision. Seeks permanent position with aggressive medium-sized general contractor. Available November. PW-6895, Engineering News-Record.

Executive—Purchasing Agent, early 30's, hard working, ambitious. Thoroughly familiar with competitive bidding and soliciting of sub-contractors. Knows how to handle people. PW-6902, Engineering News-Record.

Electrical Supt. or Gen. Fore., age 38, 15 years experience, most types of elect. installation. Excellent ref., speak Spanish. PW-7008, Engineering News-Record.

Artist—Engineering Proposals—Perspectives —Technical Illustrations. Free lance, or will relocate for full time. PW-7004, Engineering News-Record.

Construction Supt. Heavy Construction. PW-4182, Engineering News-Record.

Chief Estimator—25 yrs. experience Bldg. Const. — best references — desires position with General Contractor in South. Fully qualified for complete charge projects bidding stage to completion. Minimum salary $12,000. Will relocate to suit. PW-7018, Engineering News-Record.

A qualified Chief Estimator and Production Executive desires connection with General Contractor who wants a Florida outlet. Will furnish office, office machinery, take-off, and pricing on an exclusive basis for a reasonable weekly retainage fee. It will pay to investigate this proposition. W. C. Dick, 3507 Cardinal Boulevard, Daytona Beach, Florida. Telephone Clinton 5-1218.

Hydraulic Dredge Executive Civil Engineer available. Over 20 years experience in field investigation, cost estimates, management, consultation. Full time or project basis. PW-7022, Engineering News-Record.

Construction Manager: Extensive background all phases building construction including estimating, purchasing, contract negotiation, field staffing and supervision. Seeking permanent connection with reputable, aggressive organization. Resume available. Age 45. References. PW-7036, Engineering News-Record.

Gunite Super or Foreman, shaft man tunnel, jet seal concrete foreman; will travel. Alvis Murray, 47 A St., Niagara Falls, N. Y. Phone BU 5-6445.

Construction Executive, age 37, BCE, South Florida resident, desires to manage contractor's proposed branch office in South Florida area. Thoroughly experienced all phases building construction. Resume and references on request. PW-7041, Engineering News-Record.

M.S. in Civil-Structural Engineering—33—8 years varied design and field experience—foreign and domestic assignments—desires responsible permanent position within bridge design. Please write PW-7042, Engineering News-Record.

Graduate C.E., 26, 5 years varied structural design experience. Wishes to return to New York area from W. Coast in order to complete credits for M.S. Must relocate before fall term. Resume on request. PW-7047, Engineering News-Record.

Architectural Field Superintendent with B.S. degree. 35 years building construction and operation. Recently with top A-E firm. Good health—nearly 60. Will travel. Top references. Would like field work with A-E or owner. PW-7049, Engineering News-Record.

Construction Supt: 22 yr's experience. Will complete 5 million dollar contract by July 30th in Iran's East Country. Buildings, power plant, roads and utilities. Army Engr's supervision. After completing 2 contracts desire relocation abroad. Will furnish resume. PW-7050, Engineering News-Record.

Construction Engineer or Asst. Sup. BSCE, 34 —10 years exp. commercial & industrial estimating, cost control & supervision. Foreign preferred or domestic. PW-7051, Engineering News-Record.

Foundations & Materials Engineer, reg'd PE. MS Soil Mechs & Found Eng'g, MS Hwy Eng'g. About nine years experience in all phases of soils, foundations & materials including field & lab work. Diversified background of design & construction of hwys, bldgs, dams, etc. Specifications & reports. Desires responsible position preferably with consulting engrs, domestic or foreign. PW-7052, Engineering News-Record.

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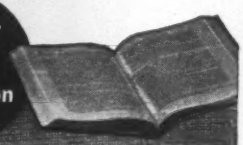

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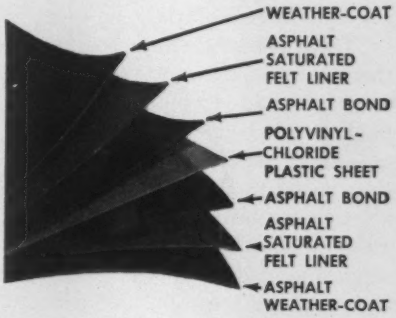

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Cost of Corruption

LEST THERE BE COMPLACENCY about the corruption that plagues our industry (ENR June 29, p. 60), consider now the serious plight of New Mexico. Payola and poor construction revealed by the recent Blatnik committee hearings have caused the Bureau of Public Roads to put a stop-order on practically all federal-aid work in the state. Rep. John A. Blatnik (D., Minn.) concluded his committee's hearings by saying:

"There is overwhelming and undenied testimony here that (1) crucially important testing and inspection work was delegated to unqualified and incompetent employees; (2) there was either failure or unwillingness of project supervisors to enforce specifications because they feared transfers or loss of their jobs; (3) there was interference from higher echelons in the administrative setup at the behest of contractors, rather than solid support of dedicated project supervisors who were ready and willing to compel adherence to contract requirements; and (4) there were project engineers and assistant district engineers who were, to use a most charitable characterization, willing to be 'subsidized' by the contractors for a variety of reasons, none of them valid."

Chairman Blatnik summarized a deplorable record of state engineer-contractor relations:

- A contractor paid $4,613 to a state employee in "rentals" for a fictitious water truck.
- A state employee received over $8,000 for being temporary superintendent for a contractor on the same job he was supervising as project engineer for the state. His pay came in the form of truck and tractor rental checks made out to his wife.
- A state employee and his brother-in-law got $27,000 in monthly rentals on two tractors they'd bought for $9,000 with no money down.

Petty stuff? Insignificant? Hardly.

As a result of it all, New Mexico's Highway Commission will be set back months in its construction program and strangled for funds to pay off current obligations. The measurable cost of corruption is in lost time and in lost dollars (see p. 23).

The cost of corruption is also obviously, although immeasurably, in the loss of face for an industry that can continue to let it go on.

A Boost for Mass Transit

MASS TRANSIT SYSTEMS in some of the nation's most congested urban areas may get a needed shot in the arm from transit financing provisions of the omnibus housing bill signed by President Kennedy (ENR June 29, p. 18).

The law broadens federal efforts to renew cities by allowing expenditures for comprehensive transit surveys and planning. It provides funds for pilot demonstration projects and makes available emergency loans for equipment and facilities.

Compared with the magnitude of the urban transportation problem, amounts of money provided by the act are not large. But their provision is a step in the right direction.

More important is the fact that some people in the Administration and in Congress are determined enough —and strong enough—to move toward the goal of integrated urban transportation systems. Such a goal is not just desirable; it is a necessity for urban survival.

Senator Harrison Williams, New Jersey Democrat who was primary sponsor of the legislation, says, "This is a major accomplishment in the annals of urban legislation. I believe it will usher in a new age in urban living and help the metropolitan areas free themselves from the heavy economic and social penalties of traffic strangulation."

He could be overly optimistic, but we hope he's right.

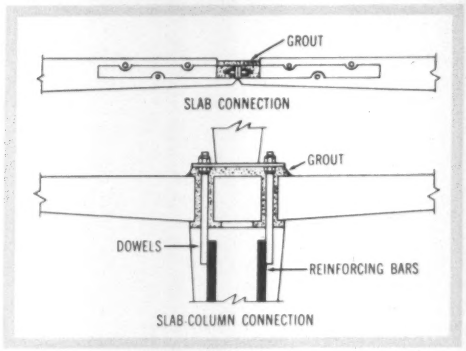
The Almighty Ruble

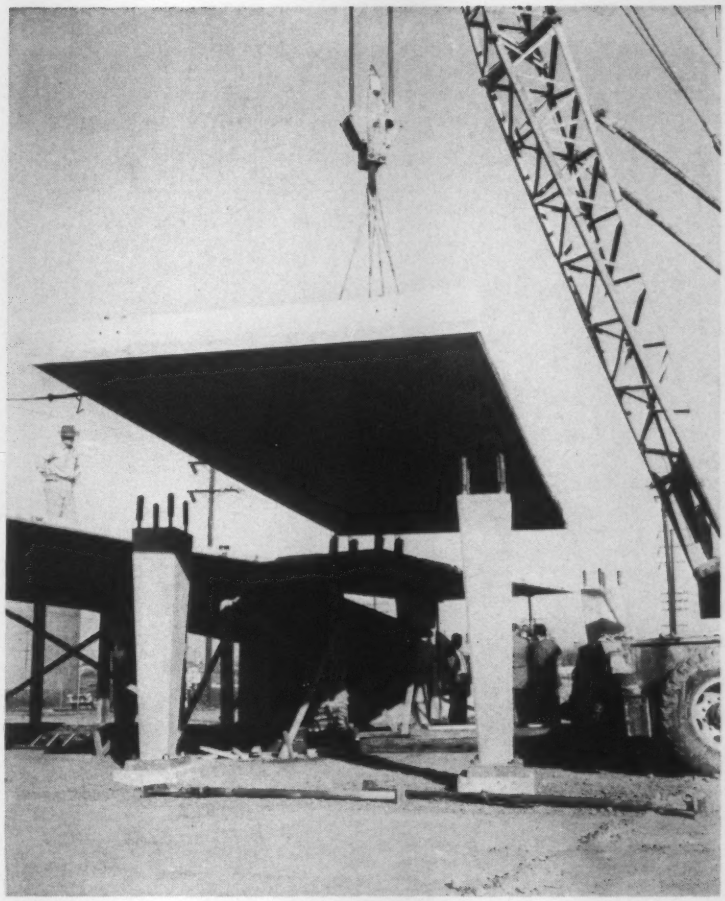
THE FAST BUCK, it appears, has its counterpart in Russian construction. The Soviets are reported (ENR June 22, p. 145) bothered by unfinished projects on which government builders rush through the big pay items, only to shift their emphasis to similar portions of other projects. It's like unbalanced bidding, but worse. Projects just don't get finished.

Something's got to be done about their incentive system, reason the Russians, to get the state-owned construction organizations to finish the jobs they start. Incentives, of course, are as much a part of the communist system as they are of capitalism. Production has its reward there as here. Construction can no more be done without rubles there than it can without dollars here. But there, it must also be done without private capital.

No wonder, then, there is concern among the Soviets when manufacturing plant operators turn to "private builders" to finish off a near-finished project the state's constructors have left undone. "Private builders," as ENR's Ernest Conine writes from Moscow, are not legal in the USSR. No wonder there is official concern in the Kremlin over entrepreneurs illicitly putting up private housing; over "construction nomads" getting double the normal controlled wages. Such things are not supposed to be part of the Marxist system.

In the old days, the opportunity of missing a trip to Siberia was incentive enough to get a job done. Now, it appears that if the government can't keep such a basic industry as construction on a rubles and kopeks basis, the industry will set and earn incentives of its own—putting its efforts where the most rubles are.





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5000 psi in sixteen hours with SIKA SET

Grout and dry pack mortar with rapid strength development and minimal shrinkage is essential for the fast erection of the new Tierpark Parking Structures developed by Tishman Research Corporation. Composed of only three elements — slabs, columns and ramps — a Tierpark structure is erected within a matter of days.

Mix proportions for high strength grout and dry pack mortar were developed at the Sika Concrete Laboratory. Sika Set liquid, diluted 1:3, added to the dry pack produced compressive strengths exceeding 5000 psi at sixteen hours. Sika Set, diluted 1:4, added to the poured grout produced compressive strengths exceeding 3000 psi at sixteen hours. Proportions of 1 part Type III cement to 1-1/2 parts sand were used.

Structural concrete was initially retarded by the use of Plastiment Retarding Densifier to facilitate finishing — with rapid strength gain as an added bonus to the manufacturer of the precast, prestressed elements.

For full details on Sika Set Shrinkage Reducing Accelerator and Plastiment Retarding Densifier ask for your copies of SET-661 and PCD-59. Offices and dealers in principal cities, sixteen affiliate manufacturing companies around the world. In Canada, Sika Chemical of Canada, Ltd.; in Latin America, Sika Panama, S. A.

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